THE IRON AGE

New York, November 8, 1917

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Plant of the Wickwire Steel Co.

From Molten Iron to Wire Rods Under One Roof—Handling Without Railroad Switching—Blooming Mill a Feature

THE new steel plant of the Wickwire Steel Co. is now in operation. It comprises an open-hearth plant and rolling-mill machinery for producing wire, nails and tacks. From the standpoint of design it is especially noteworthy. The most noticeable features of the new mills are the compactness and the handling of all material from one mill to the next by overhead cranes without the usual railroad switching and the placing under one roof of the necessary operations from molten pig iron to wire rods. Special reference may also be made to the blooming mill, shown in the accompanying illustrations.

Construction work on the expansion of the Wickwire plant, which is located on the Niagara River just north of Buffalo, N. Y., was started in May,

A slide transfers ingots from the crane in open-hearth section to the crane in the blooming mill section for delivery to the heating furnaces

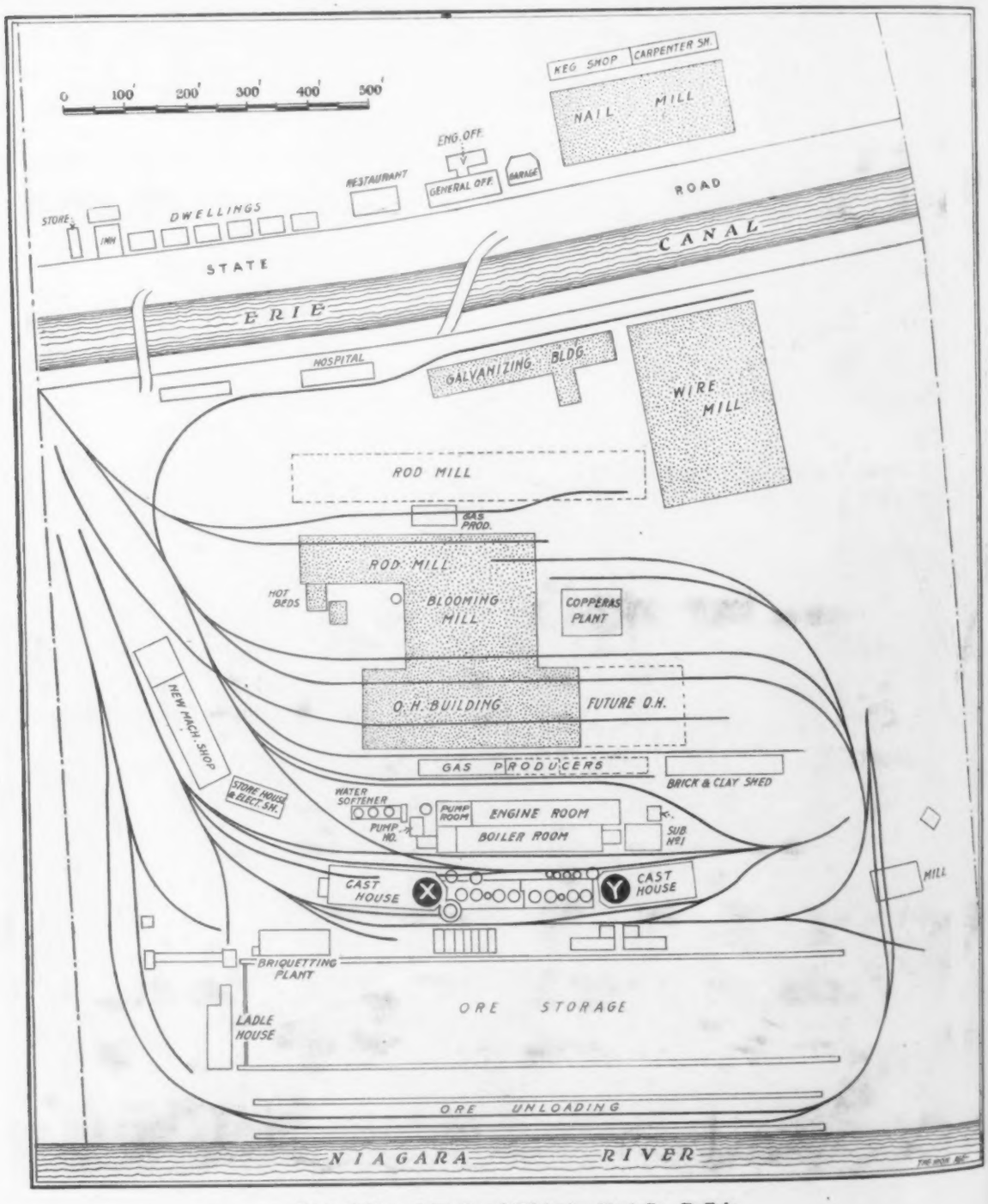
1916. The four open-hearth furnaces, gas producers, blooming mill, rod mill, wire mills, nail mills, etc., are now practically in full operation. An accompanying plan of the property, showing the arrangement of the mill buildings, indicates also the proximity to the steel plant of the two Harriet blast furnaces of the Wickwire company. The first steel was made Jan. 8, 1917, and the blooming mill started operating in July and the rod mill in August. The buildings were erected by the Lackawanna Bridge Co.

There are four 60-ton open-hearth furnaces. They were designed and erected by Alex. Laughlin & Co. and are equipped with a Wallman-Seaver-Morgan low-type charging machine. There are eight Morgan automatic gas producers, coupled two to each open hearth, these producers were built by Morgan Construction Co., Worcester, Mass. A traveling bucket crane takes the coal from a bin under the cars, empties it into a bin above a crusher and also takes the crushed coal to the producer bins.

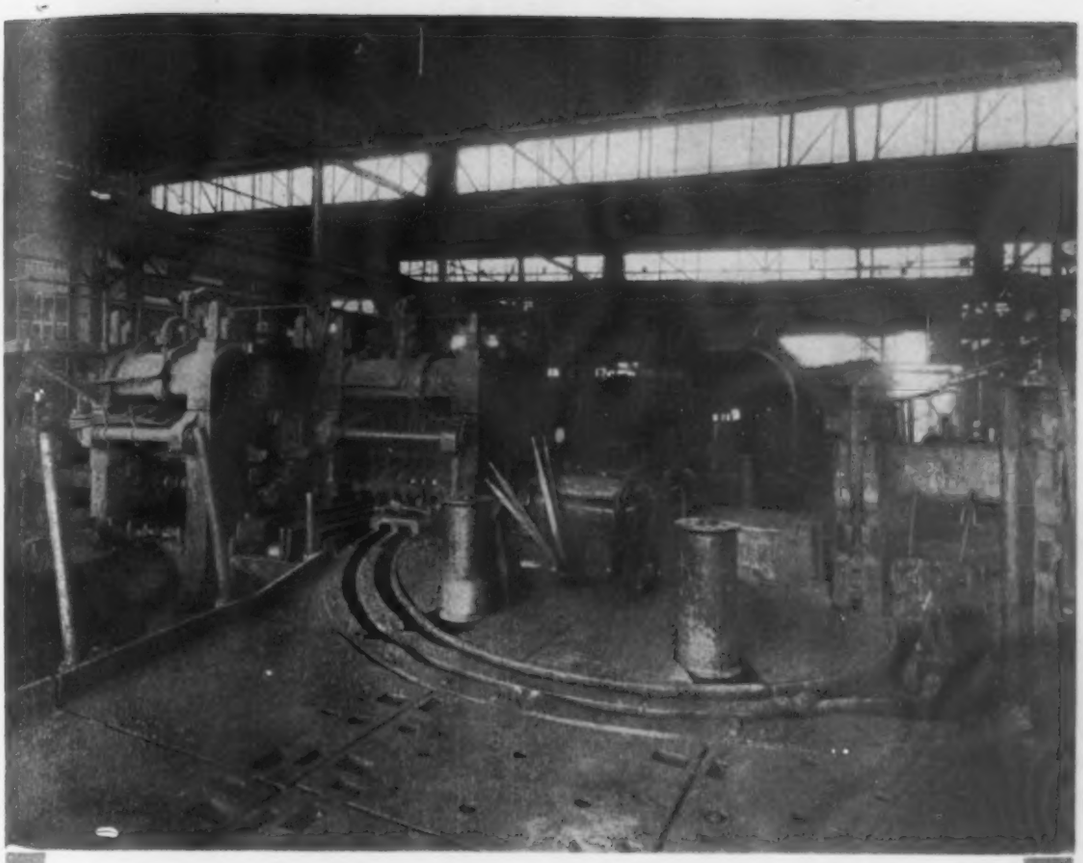
A 50-ton Alliance crane serves the charging floor and a 100-ton Alliance crane travels over the pouring side. The furnaces are served by a 400-ton metal mixer built by the Variety Iron & Steel Works Co. A 10-ton Alliance crane on the same runway with the pouring crane sets the molds, strips and puts the ingots on a slide that delivers them under the crane in the heating furnace building.

There are two continuous heating furnaces charged by an overhead 10-ton crane. The heating furnaces were designed for the use of coke oven gas or producer gas, and at present are operating with coke oven gas. A hydraulic pusher delivers the heated ingots to the blooming mill tables.

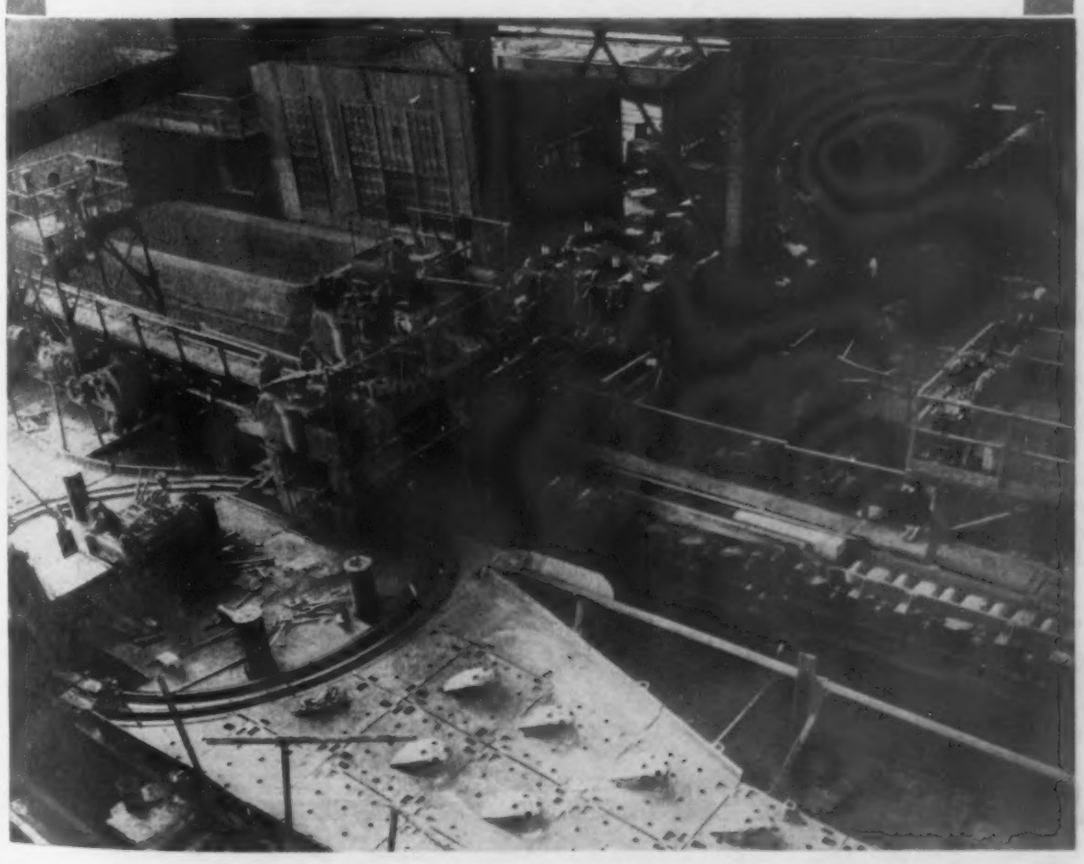
The blooming mill was built by the United Engineering & Foundry Co., and consists of three stands, two 32-in. two-high sets and one 24-in. These are driven by a 2200-volt alternating-current



General Map of Works of Wickwire Steel Co., Buffalo



The blooming-mill consists of three stands, two of 32-in. two-high sets and one 24-in. two-high set. The stands are staggered and there is no reversing. Movable tables serve the two larger sets, so the piece passes back and forth in a horizontal plane and is finally looped twice in the repeater which serves the 24-in. stand. The photographs are views of the m'l 'aken in opposite directions



A hydraulic pusher forces the ingots into the blooming mill heating furnace. The ingots are arranged alternately as to the position of the ends to allow for the taper of each ingot

General Electric motor of 1400 hp. rating. The stands are staggered and driven through a gear set so that there is no reversing. The piece to be rolled is delivered to a movable table and passes through one set of rolls to another table; it moves back and forth as in a three-high mill, only in a horizontal plane in place of a vertical one.

The bloom is cropped at 4 x 4-in. size and then loops in a repeater through the 24-in. stand and is finished to 1¾-in. size with the second loop. The 1¾-in. bar is run out to a shear and cut to 30-ft. lengths on a hot bed that has its delivery end under the rod-mill crane.

There is under construction a Morgan six stand 18-in. continuous mill to take 4 x 4-in. billets from the blooming mill and finish 1¾-in. bars for the rod mill and any merchant billet or bar sizes to 1½ in., also sheet bars, etc. When this is completed, the looping feature of the blooming mill will be discontinued.

A Morgan continuous double-strand rod mill is installed, driven by two General Electric alternating-current variable-speed motors of 1300 and 2400 hp. rating. This rod mill has new features in rod-mill construction, aiming at the production of a better rod than usual, more closely to desired section. It delivers the product to an inclosed conveyor arranged so that the bundles are not exposed to the air, thus eliminating excessive scale and producing a soft rod.

A wire mill with 300 wire-drawing blocks and the necessary equipment for finishing all kinds of market wire is just starting into operation. A nail mill is about to start with 70 nail machines, 24 barbed-wire machines and 50 tack machines. A number of other additions have been built, such as new machine shop, wood-working shop, brick sheds, dolomite burners, galvanizing and tinning buildings, etc.

The Youngstown & Suburban Railroad plans to erect a power plant at Southern Park, near Youngstown, Ohio, and also an addition to its present power plant in that city.

Christmas Card Money for War Relief

The following letter, which is being given wide circulation, is signed by the Illinois Steel Co., Morden Frog & Crossing Co., American Steel & Wire Co., Universal Portland Cement Co., Lackawanna Steel Co., Carnegie Steel Co., Inland Steel Co., Chicago Railway Equipment Co., A. M. Castle & Co., The P. & M. Co., A. J. O'Leary & Son Co.:

CHICAGO, Oct. 27, 1917.

Dear Sir:

At this time of world war when money is so sorely needed to alleviate suffering, reduce hunger and care for the sick and wounded, it seems sheer waste to spend money for such unnecessary and unproductive things as holiday greeting cards.

A number of companies and individuals, among them the undersigned, whose custom it has been to distribute such cards, have decided not to do so this year, but instead to contribute the money to war relief organizations, where it will perform some real service.

As lack of time prevents a personal canvass of other steel producers and consumers, as well as business houses and banks in general, this form of letter is substituted, and it is hoped the suggestions offered may meet with wide approval and be productive of generous results.

Contributions should be sent direct (together with a copy of this circular, if desired) to the American Red Cross, the American Fund for French Wounded, or any other relief organizations that may appeal to the giver.

What is called a modified welding process to repair broken aluminum parts, for example, has been developed by the Aluminite Mfg. Co., Inc., 427 Fourth Avenue, New York. The edges of the metal to be consolidated are cleaned, as with gasoline and a wire brush, followed by filing, and then a solder is applied with the aid of a blow torch to tin the surfaces to be joined. Finally the parts are brought together and a torch used together with solder, which is introduced into the crack in a pasty form. The company has issued a sheet of directions which emphasizes that the process does not subject the metal to excessive heat strains.

The Woodville Lime Products Co., Nicholas Bldg., Toledo, will shortly place in operation a new stone crushing plant for the manufacture of dolomite at Woodville, Ohio. This plant will have a daily capacity of 60 to 80 cars of dolomite.

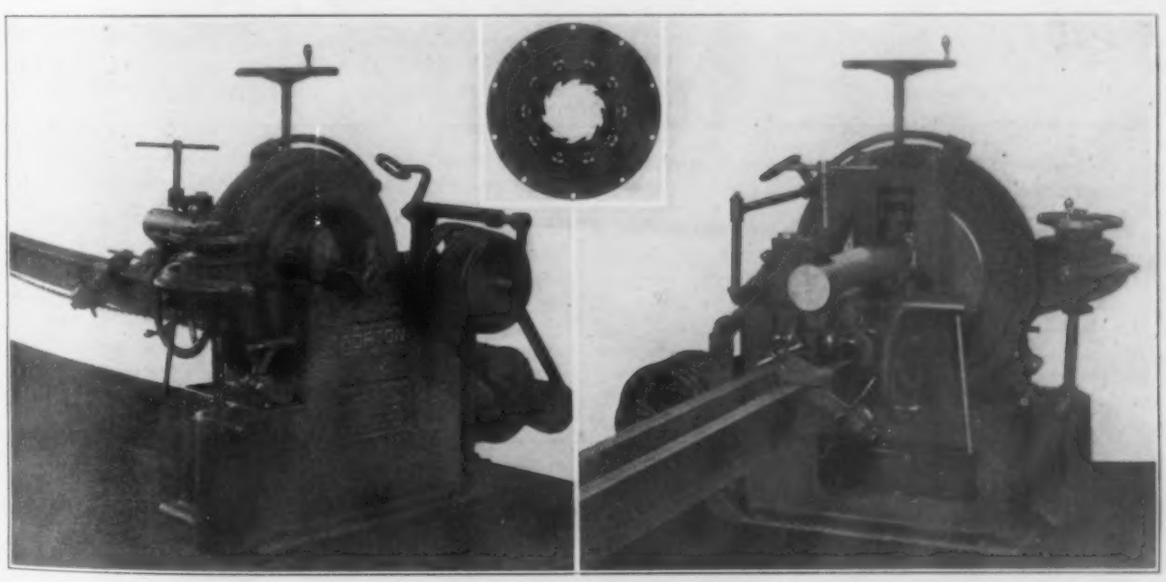
New Internal Bar Cutting-Off Machine

For handling rounds, squares and any other shape that can be contained within a circle 4½ in. in diameter, the George Gorton Machine Co., Racine, Wis., has brought out a new heavy-duty cutting-off machine. It is of the builder's standard internal tooth type of cutter blade, the 10 cutters used being held in blocks which in turn are driven into pockets in the bore of the blade. The machine is designed particularly for use in rolling mills and car and locomotive works and by builders of engines and machinery.

The blade used is of chrome vanadium manganese steel which is heat treated and ground on both sides after the cutter pockets have been roughly milled out. These pockets are tapered on one edge to correspond with a taper on the edge of the block, the cutters and blocks being centrally located by a system of tongues and grooves. It is pointed out that with this arrangement the cutters can be keyed in very rigidly without distorting the blade thus giving the effect of a heavy band surrounding the cutters and securely fastened around periphery to a heavy cutter drum. After the blade has been ground a light cut is taken to finish the pockets to the desired size. The cutters which are of high-speed steel are made alternately wide and narrow, with the latter projecting a slightly greater distance toward the center of the blade than the wider ones. This arrangement provides for the cutting out of the metal in the center of the cut by the narrow cutter, while the corners are cleaned up by the wide one.

An adjustable automatic power feed mechanism of new design is employed. This it is pointed out obviates the necessity for the reversal of any clutches when the operator is ready to raise the cutterhead to position after finishing a cut. The adjustment of the cutterhead either up or down is controlled by the handwheel as the feeding pawls are automatically disengaged when the cutterhead is being raised, thus permitting the screw to be turned in the opposite direction. A large spring under the cutterhead serves as a counterbalance to take the weight off the screw. In tests stock was cut off with a feed of 1½ in. per min. and a feed of 1 in. per min. or more can be maintained in regular operation, depending upon the hardness of the stock that is being handled.

A belt-driven cutter grinding machine is provided for sharpening the cutters employed. This is provided with tight and loose pulleys and does not require a countershaft. A stock rack operated by a handwheel located at the side of the machine is furnished where the machine will be operated practically without interruption. The builder's patented measuring device is provided, thus eliminating the necessity for the operator to walk to the back of the machine to measure the stock that is being cut off. Where only a few cuts are to be made from each bar, the single roller stand can be provided. This is adjustable for height to compensate for unevenness in the floor of the shop to which it is fastened by bolts.



Cutters Keyed Into the Bore of the Blade Are Employed in a New Internal Type Machine for Handling Any Shape or Size of Material that Can Be Contained within a 4½-In. Circle

Westinghouse Electric Employees Make Fine Record

Setting as their goal subscriptions amounting to $1,500,000 of Liberty Bonds, the employees of the Westinghouse Electric & Mfg. Co., at the close of the campaign secured subscriptions amounting to $1,610,000 or an over-subscription of $110,000 beyond the goal. The employees of the subsidiary companies subscribed approximately $620,000, and the company itself subscribed for $2,500,000, making a grand total for the company of about $4,730,000. An interesting fact in connection with this bond subscription is, that out of approximately 30,000 employees, 22,000 subscribed to bonds. With the hearty approval and co-operation of the management, the employees divided the immense works into 18 sections with a captain over each. They in turn, selected their own lieutenants and teams. This sales force, embracing many salesmen of experience, aggregated 400 employees and made an enthusiastic as well as systematic canvass of each and every employee of the company with the result as noted above. In many cases, the sections reported 100 per cent subscriptions; in other words, every employee in the section subscribed. In some cases where earnings of the office boy or other employees were not large enough in the opinion of the committee for his department to buy a bond, the employees of this particular section contributed and purchased a bond for him. The progress of the campaign was thoroughly advertised to the employees by means of large wooden thermometers installed at the various entrances to the works, which were up each day to indicate the number of bonds subscribed to that time. Placards were also printed daily giving the total amount subscribed up to the previous day.

The Bond Foundry & Machine Co., Manheim, Pa., announces that it has purchased the property and good will of the Queen City Foundry Co., Ashbridge's Bay, Toronto, Canada, which will be operated as the Bond Engineering Works, Ltd. The new company will continue the manufacture of gray iron castings for the trade, and also will make a line of power transmitting specialties. The new works will be under the management of H. M. Lee.

Prospects for Machine Tool Exports

Symposium at Convention Reveals That American Manufacturers Have Excellent Opportunity to Capture Foreign Markets After the War

ONE of the most interesting features of the annual convention of the National Machine Tool Builders' Association at Hotel Astor, New York, Oct. 30-31, was a symposium arranged by C. E. Hildreth, general manager of the association, on prospects for the exportation of machine tools after the war. Russia, Belgium, France, Spain and South America were represented by able and carefully prepared addresses from men who are thoroughly in touch with conditions in each of those countries. The present large scale of production of machine tools in this country—estimated by President J. B. Doan of the association to have reached in the past three years a total volume equal to the preceding 10 years—makes the subject of post-war business of vital importance to all machine tool builders.

R. Poliakoff, Mech.E., assistant professor of mechanical technology, Technical Institute, Moscow, Russia, commissioner of the Russian Government Purchasing Commission in the United States, spoke on Russia in part as follows:

"In considering the prospects of exportation of machine tools to Russia, we have to find out first if there are any such prospects. This is a most natural question, and it can be answered only in one way: in the affirmative, of course. Russia became acquainted with American machinery many years before the war broke out, has learned its value, and has acknowledged its superiority, as compared with similar products of other countries. It is true that the amount of machinery imported into Russia from the United States before the war was considerably less than the number of machines imported from other countries, chiefly from Germany and England, but this fact is being accounted for by specific reasons—some of which are as follows:

Russia's Foreign Trade

"In the last two or three years preceding the war, the imports of machinery to Russia amounted approximately to $5,000,000, of which about three-fourths, to the value of $3,500,000, originated in Germany, about $1,000,000 in England, and about $1,000,000 in the United States. I do not deem it necessary to point out why Germany obtained the bulk of the business. It has been explained on many an occasion, and it is being pointed out every time one refers to the past superiority of Germany in any line of industry—be it machine tools, or just buttons for ladies' waists. However, with reference to machinery in particular, we have to point out the following specific reasons:

"While there cannot be the slightest doubt that in most cases the German machine tools were of inferior quality, they, however, served the purpose quite satisfactorily, supplying the ordinary user with a cheaper machine. Some places in Germany made a specialty of cheap lathes, for instance, as the Chemnitz districts in Saxony, which turned out lathes in big quantities and at cheap prices. If some of you ever happened to be in Chemnitz, you probably have seen these factories; employing cheap labor, getting their castings from another factory, supplying with beds a number of shops, etc.—circumstances which allowed the Chemnitz manufacturers to sell a 16-in. lathe, with an extra treadle drive at $170 in Moscow, freight, duty and agents' commission all included.

"It is noteworthy that the types of the German machinery were so to say inspired by the United States products and in many a case they were an imitation, a copy, of the American machine, yet they were better adapted for the sale. An instance which I am going to cite now will make clear to you how this was attained by the German manufacturers.

"Take a bolt and rivet forging machine of certain size, which is classified by the American manufacturer for making rivets up to say 1 in. diameter; the German manufacturer took this machine, copied it, but specified that it is capable of producing rivets up to 1¼ in. or even 1½ in., and so he was able to produce a machine which was considerably cheaper than the American machine of 1½ in. capacity. But the German manufacturer often turned out to be victorious also in the practice of using the machine. Why? Because a 1½-in. machine is not always used to produce 1½-in. rivets only, more often it is used for making rivets of smaller size, which work the German machine naturally withstood all right, and if a breakdown sometimes occurred to the machine when worked on 1½-in. size well, the metal might have been too cold or too strong, so far as tensile strength was concerned, etc., and finally the Russian user, not going too deep into the whys and wherefores, simply reinforced sometimes a certain part of the machine which he found out to be too weak when called upon to work on the limit size and when this was done, the machine was all right.

"You all know that the best German machine-tool building concerns were manufacturing their machines on American lines; take, for instance, the firms of Ludwig Loewe & Co. in tools for machine shops; De Fries and Hasenclever in machines for forge shops; Pittler, in automatics, etc., but naturally they produced them cheaper than the corresponding firms in the United States. They were all nearer, so to say, so far as means of communication and intercourse were concerned, and naturally succeeded more easily in doing business with Russia than other countries, the United States included.

Neglected Export Business

"There is one more reason which ought to be mentioned here; after all, taking everything into consideration, you, American manufacturers of machine tools—at least the majority of you, to be just to the minority—did not look after export business, did not care much about the export trade, and in cases when you did care, you wanted the Germans to do all the bother for you, you only wanted to receive the checks. While this may have been a good business policy in ante-war times, it cannot hold good now and especially after the war. Not having attended personally to the Russian export market, you did not get any knowledge of it, and if you really now want to enter the field, you have to do so afresh, without any previous experience, this latter having been buried in the offices and heads of your former German agents. This was, so to say, your first pre-war mistake. Let us now see what happened during the war.

"The war created, of course, an enormous demand on machine tools in all the warring countries, in Russia among them. The former supply of machine tools to Russia, i.e., Germany, having been cut off, all eyes and hopes were turned toward England, the ally of Russia, and the United States. England could not satisfy all the Russian wants, though she did satisfy many, and America was therefore called upon, but here again the American manufacturer made the same mistake which he had made before the war; he allowed a number of responsible and irresponsible persons to act for him, and in many cases these persons did not act as they should have acted.

An Interesting Experience

For example, promises were made which evidently could not be fulfilled under any circumstances. To illustrate: In May, 1915, a certain young Russian ceramic engineer applied to me in Moscow asking me to help

him get a position in his specialty. At that time I had no such position for him in view. In July, 1915, I met him on the main promenade in Petrograd, and asked him how he was getting along. 'Very well,' he said. 'I now sell lathes.' 'Lathes?' I was surprised. 'What has this to do with ceramics? Whose lathes do you sell?' and he mentioned an American firm—which for my illustration we shall call East Kent. 'I can offer you 100 lathes a month, delivery starting next September.' A few days later I went to London, came in touch with different dealers, and one of them offered me again 100 East Kent lathes a month, delivery starting next September. One day I went from London to Leicester, and visited there a certain manufacturer who also acted as agent for some American machine tool manufacturers and among his machines he offered me East Kent lathes at the rate of 100 per month starting next September.

"I came to New York in August, 1915, called on a certain forwarding agent to arrange about some of our shipments. It turned out that he had in his office also a man who was selling machine tools, who offered me—what do you think?—East Kent lathes at the rate of 100 per month, delivery starting next September. I did not order 100 lathes, but I ordered four to be delivered in October, 1915, and have not got them yet in October, 1917.

"Here we have a case where the manufacturer had nearly as many agents as there were units in the advertised rate of his monthly deliveries, who all took orders for him without any chance of living up to the promises.

Will It Be Continued?

"The question naturally arises whether the same policy will be continued after the war. There is not the slightest doubt that the demand for machine tools in Russia after the war will be very great. To understand this assertion, the following factors must not be lost sight of. First of all, the rehabilitation of the regions, the devastation of which was so thoroughly attended to by the Germans, will have to be carried out as quickly as possible when peace permits. Apart from this, another perhaps even more influential factor is coming into play during the present war as a direct result of the revolution. Whatever conditions exist now in Russia, which are not as hopelessly bad as they are pictured by some sensation-seeking newspapers and newspaper correspondents and so-called eyewitnesses, the country is undergoing a process of regeneration and reconstruction which will result in a more democratic level of life than that which existed heretofore, and it can be accepted as an axiom—and statistics prove it—that in a democratic country the income per capita and also the needs which incomes create are much higher than in a non-democratic country.

"By what means will these increased needs of the country be met? By importing everything she wants? Certainly not. This would be a financial fallacy, leading to bankruptcy. The debt of Russia is now large enough, and certainly it will be out of question for any form of government still to increase it by allowing foreign goods to be imported in unlimited quantities, and in this way still more to turn down the lever of financial stability.

"To summarize: First, there is not the slightest doubt that Russia can be a good market for American machine tools after the war; second, to avail themselves of this market, the American manufacturers must be interested in it; and third, provided such an interest will exist, the pre-war business policy of the American machine-tool manufacturer will have to be changed, and a new policy substituted."

Prospects in Spain

Henry S. Moos, M.E., member of American Machinery Syndicate, New York and Spain, spoke on Spain in part as follows:

"I have been living in Spain for 12 consecutive years, devoting my time to the introduction of American machinery, machine tools almost exclusively, carrying on a continuous fight with the rest of your European competitors combined. It has been my experience while in Spain to find out that customers, when their orders are shipped promptly, their specifications carefully observed and their machines are above criticism, will pledge their loyalty and their trust with the man or the manufacturing concern they deal with, and this to such an extent as to make it extremely hard to win them over to the competition. It is by no means unusual for a customer to continue placing his orders at a higher price and upon less favorable terms of delivery and payment than offered him elsewhere solely because he has learned to trust his man or manufacturer with whom he places his orders, knowing, as he does, that his confidence in him will not be taken advantage of and the higher price he may be called upon to pay he considers ample justification in return for assurance of fair treatment.

"A great number of manufacturers have not paid much attention to the Spanish market, possibly because they thought Spain was prominent rather in producing beautiful black-haired girls, painters of fame, high-paid bull fighters, olives, oranges and sardines, more than prospective customers willing to spend their dollars for a high-duty lathe or a high-speed drilling machine.

Spain's Progress

"The Spain of to-day is beginning to take a more prominent position in the world's markets of machine tools than heretofore. With the outbreak of the war, the country has been suddenly cut off from its accustomed sources of supply, causing the paralyzing of its industrial life due to the disorganization of the market. Pretty soon, however, Spanish capital and industries began to realize to what extent they had been depending on the foreign markets and immediately steps were taken to readjust local conditions. Thanks to individual effort combined with the Government's encouragement, industrial life in Spain has now reached a degree of activity never known before, in peace times. Spain's neutrality is turning out extremely productive to its economical situation. During 1916, Spain's foreign commerce, showing a total of $540,000,000 for imports and exports, set a record for itself. The increase of activity along metallurgical industrial lines constitutes an important factor in the compilation of these figures. The national treasury found new strength by the unusual increase in value of the national monetary unit which, during the last years, had suffered from slow depreciation. The railroads immediately recovered from a period of depression while the merchant marine became so prosperous that the Government decided to discontinue the subsidies granted in the past to encourage the successful operation of certain navigation companies. Although in many instances factories and mills suffered for lack of raw materials and necessary machinery, the higher prices obtained for the finished product resulted in larger profits. The Spanish industries gradually realized the necessity of freeing themselves of foreign market dependency and acted accordingly until at present Spain is manufacturing a score of products to which no thought in the least had been given until the country entered this era of prosperity.

Government Helps

"While some suffering was caused by the higher cost of living, sometimes resulting in strikes, the difficulties of the moment for the most part were successfully solved by governmental measures coupled by private initiative. The transformation of Spain, set out to rank as a commercial and industrial power in the world's market, cannot but be considered as a good omen for the future.

"Amongst the many, the Spanish Government has under consideration the establishment of a National Bank of Foreign Commerce, with a view of promoting the establishment of new industries and proposing to grant special protection and privileges to industries by advancing them funds up to 50 per cent of their capital invested, guaranteeing minimum dividends on the invested money, tax exemptions for a number of years, favoring import duties on raw material not produced in the country, imposition of low transportation charges, etc.

"The steel mills of Altos Hornos of Bilbao can be favorably compared with the largest plants on the continent, handling alone in the neighborhood of 3,000,000 tons of iron ore per year.

"The shipbuilding yards of Spain on both sides of the peninsula are actively at work since the outbreak of the war, and they are continually enlarging their facilities and putting in new and additional equipment. The merchant ships now on the ways represent an estimated total displacement of 180,000 tons.

"Several concerns in Spain are beginning on a large scale the building of ships' engines—Diesel and internal combustion—and inquiries for a large number of machine tools for such shops have recently come in. A new concern in the northern part of Spain specializes in the construction of steam and oil driven fishing vessels and has already placed substantial orders for machinery.

"Spain started to build her railroads in 1840 and at the beginning of 1916 possessed 8700 miles of track. Up to 1915, the State had contributed $139,000,000 toward railroad construction. The street railways represent some 600 miles of track. Heavier locomotives have now been acquired and many bridges are being strengthened to support them. Some rolling stock has been imported and Spanish car builders have been active in producing material both for domestic use and for export.

"A prominent industry in Spain is the railway and tramway car building industry. There are five factories in Spain, two of which are very important. The automobile industry in Spain is making a notable progress. The largest factory in this line has bought in 1915 about $300,000 worth of American machinery, and recently there has been established in the center part of Spain a new company for the manufacture of motor trucks which, in the last few months, has placed orders for American machine tools amounting to close $250,000, and is continually purchasing new and additional equipment. Five aeroplane factories are working under contract for the Spanish and Allied governments.

Entirely New Industry

"As a consequence of the difficulties which a number of Spanish manufacturers have experienced in securing machine tools during the period 1914-1915 from the United States, an entirely new industry has been created in Spain. Before the war practically no machine tools were produced there and at that time only one concern had started to build a facsimile of a German lathe, while some other concerns were making woodworking machinery and two or three types of upright drills, a slow-speed hack saw, bench grinders and some power presses, also some tinsmith machinery, which to my knowledge, covered the Spanish machine tool industry in toto.

Conditions Changed

"To-day conditions are somewhat different; there are now at least 20 firms, some of them employing as many as 500 and more men, engaged in the manufacturing of a wide range of machine tools, principally upright and sensitive drilling machines, screw cutting engine lathes, planers, shapers, etc., and at the present time all of these concerns are selling all they can produce. If our manufacturers at home had been better able to pay more attention to these Spanish orders, early in 1915, when orders for machine tools were pouring in, and in a position to make deliveries, it is very likely that numbers of these Spanish enterprises now producing machine tools would not even had a chance to start in this new line.

"The opportunity for American manufacturers to obtain a lasting foothold in Spain is greater now than it has ever been. Just consider that the considerable number of machine tools shipped to Spain in the last three years from this country alone is probably larger than the sum total of such machinery shipped into that territory during the 20 preceding years. With but few exceptions, these machines have established for themselves and their producers a wonderful reputation which, let us hope, may be everlasting and serve as a stepstone for what may justly be expected in that direction."

France Will Need America

Roger P. Redier spoke optimistically of the outlook in France.

"France has deeply bled herself," he said; "her life for the last three years has been but sacrifices over sacrifices of all kinds; she has voluntarily dropped everything that had not a direct connection with the war, she has seen nothing else but her 'sacrifices for victory,' and when victory comes, she will have to face a serious problem, and that is, to restore her economic and industrial life. At the present time, most of her home trade and all of her export trade have gone and although the demand will still exist, it will require capital and labor to rebuild the business. Both of these essential factors will be scarce.

"We shall then see an evolution, another way of handling the business; we shall see labor-saving machinery used where it was not before the war; we shall see a better feeling among manufacturers that will encourage the development of the trade; we shall see, I hope, associations like this one that have accomplished so much for their members through the everlasting efforts of their officers; we shall see a new France, a new activity, no more easy-going. France will become, and has to become industrially, a money-making country.

This Country First

"This evolution cannot be made without the aid of America and of American machinery, because this country was the first to face the problem of an every day increase in the cost of labor, as well as a constant demand for larger production, and has become in the line of labor-saving devices, the master of the world. That France will enter the field of making machine tools I do not believe, because it would mean for her the loss of too much valuable time in experiment before she could ever begin to compete in an already taken up market. France, to make money, to re-establish her exchange, will have to export and to increase her export in goods for which she always had a world-wide reputation. She will have to create at home machinery for her special industry; she will have to rebuild and re-equip her destroyed factories, to rebuild her rolling stock as well as her merchant marine. She will have to organize herself, in one word, for the trade of export, for which she has never been properly prepared. All this will demand machine tools.

"If the demand for machine tools exists, which it no doubt will, then the way of selling will surely change, and dealers on the other side will have to face another situation.

Two Classes of Customers

"There will be two classes of customers, the ones that have been engaged since the beginning of the war in manufacturing war material, and the ones less fortunate whose factories have been destroyed or closed during the struggle. While the first class have been developing enormously, in certain cases passing from 4000 hands to over 20,000 hands, buying machinery in large quantity, and enjoying a very prosperous trade, the other class will find themselves when peace is restored with empty shops; in most cases machines having been requisitioned for Government purposes, and their capital is in a very precarious condition.

"The first mentioned class of customers, although they will require machine tools of certain types to stabilize their regular manufacture, will not be for a little while what we might call heavy buyers, and the attention of dealers will lean toward the other class whose needs will be greater and more general. There is no doubt that these customers in order to restart their business will require easy terms of payment, and will apply to the dealers for this; machine tools being the elementary first necessity in any manufacturing proposition.

"What will be the position of the dealer? While on one side he will be anxious to do business and to push forward the machines he represents, on the other

side, limited by his cash resources, he will have to ask for help from his manufacturers in the same form as he will have to help his customers, and whether you might call this easy terms of payment, or consignment of machines, it will mean credit. I have no doubt that arrangements of this kind which will mean a closer collaboration between manufacturers and dealers are probable, and if realized, will certainly lead to the development of the trade and to the benefit of both nations which are already allied in arms and will also be so industrially.

"At the beginning, however, a small cloud might darken a little the blue horizon of the situation, and that is the heavy buying done by the American Government for export to France for military purposes. The machines already bought aggregate, I understand, a few thousand, and are only the beginning. There are good reasons to believe that these machines will never come home again ,and will be sold on the spot after the campaign, creating at that time a little disturbance in the market.

"But after all, we cannot really expect to supply the same demand twice."

After the War in Belgium

E. G. Todd, of E. Isbecque & Co., New York, spoke on Belgium in part as follows:

"Belgium has never been a country which has produced any great number of machine tools, even though it is one of the most industrious and densely populated countries on the globe. Aside from a few shops which produced heavy lathes for railroad work, which were not of a modern design, and two or three lathe constructors, the country was devoid of machine tool builders. To give you an idea of the industry of this country, there are situated in the district of Liége alone 250 machine shops, including, of course, both large and small.

"Now, dealing with the prospects of exporting American machine tools at the present time, this is not quite as hopeless as most of the American manufacturers think. While, of course, it is impossible to ship directly into Belgium, it does not mean that the Belgian manufacturers are just being idle, but there are at the present moment several large live inquiries for machine tools to be delivered as soon as ever circumstances permit. In other cases certain Belgian firms are actually placing these orders, giving the American manufacturers where necessary the deposits asked for, and upon delivery of the machines becoming due paying fully for them and storing them either at the manufacturer's plant or in a public warehouse in the large cities.

"This, therefore, will partly answer the question which is uppermost for the moment in the American manufacturers' minds as to whether the Belgians will have any funds at their disposal after the war for the payment of the tools which will be necessary to re-equip their factories.

"Again, most Belgian shops were never very well organized, and their equipment has been added to as and when required, but, during this idle period the Belgians have rearranged their plants and also made layouts by which they will become much more modern and better organized immediately they can re-equip them.

Germans Have Stripped Plants

"Another point which you are probably not aware of is that for the first two years of the war certain factories in Belgium were working, not at full capacity, but were keeping fairly busy, and were allowed by the German Government to export their products to Holland and other countries. This, however, has since been discontinued, as the British Government would not allow the full value which the Belgian manufacturers received for their goods to be remitted to Belgium. Also the Germans have now stripped every plant in Belgium of all the machine tools they could find.

"Dealing with the situation after the war, there are one or two serious points which have to be considered. First of all as to whether Belgium will have her independence restored, and I do not think there is a doubt in the mind of any gentleman here present that this will not be fully accomplished with the assistance of the Allies.

"Secondly, should the Allies find it necessary to blast their way through Belgium as they have had to do in the northern part of France to make the Germans retire, and should the Germans also pursue their tactics in Belgium as they have in France of razing everything to the ground as they retire, it is easily conceivable that no machines will be required immediately after the war.

"This is looking at the situation in its gloomiest aspect and one which I do not think will be brought about, but think after the war we shall find Belgium in about the same state as it exists to-day.

"Assuming this, I would like to have been able to give you gentlemen some statistics of the importation of machine tools from Germany, England and America for the two years prior to the war, but I regret to state that I have been unsuccessful in obtaining these figures, due to the great difficulty in communicating with any Belgians who have these data.

"However, one thing I can definitely say, and that is that there are absolutely no machine tools left in that country to-day, and they, therefore, must all be replaced. In some of the large factories the Germans have taken as many as 1500 tools, and in some of the medium-sized factories 500, and so on all the way down to the smallest shops in which they have only taken two or three. Some persons assume that the Germans will be compelled to give these machines back after the war, as they have all been very carefully tagged and tabulated from the various works from which they have been taken. Personally, I think these machines will be useless after the war for performing any high-class precision work, as we all know the very intense usage which they have had during the war, and even the highest class of tools cannot stand up for any length of time against this rough usage unless they are properly taken care of, which, of course, the Germans have not had time to do.

Second-hand Tools to Be Plentiful

"There will, however, be certain second-hand tools available in England and France after the war, and I would imagine that some of the best American tools which are shipped just before the conclusion of peace will find their way to a certain extent into Belgium, as they will have had very little wear and will be in first-class shape; but the earlier machines which have been delivered, I do not think will be in such great demand, as they will not be in a very good condition; also the Belgians do not look with favor upon the purchasing of second-hand tools, and I am convinced will prefer to commence over again with new machines.

"Before the war the largest exporters of machine tools into Belgium were Germany, then America, then England, and then Sweden in a minor degree.

"You will, therefore, see that the largest competitor will be eliminated, but the Germans no doubt will endeavor to find means of exporting their machine tools again to Belgium. The Belgians, however, will surely devise means to exclude German machines.

"The Germans were exporting to Belgium both the cheap as well as expensive machine tools, but they were rather of the heavier class of tools than most American manufacturers make. They specialized a good deal in railroad tools, a subject which I intend to deal with a little later on. They had very low freight rates granted them by the government, which considerably reduced their cost of freight and enabled them to compete very easily against the American manufacturers. They also had the assistance of the banks, which enabled them to give very lengthy credits, which in some cases were entirely unnecessary, except for spoiling the market.

"The English firms I think we shall find will be the biggest competitors against the American firms in the exporting of their machine tools into Belgium after the war, as they will be very much nearer the seat of action and have at the onset a great advantage over

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Skilled Men Drafted for War Duty

Many Industries Crippled and War Department Will Change Its Methods—Appeal for Legislation to Be Made to Congress—Interesting Statistics

WASHINGTON, Nov. 6.—The announcement that the second call under the selective draft will probably be made early in the new year and will cover at least 600,000 men is causing no little anxiety among manufacturers and especially among those who are producing war material either under direct contracts with the Government or as sub-contractors. Many communications received here reflect the fear on the part of these manufacturers that the new draft, if carried through on the same basis as the first call, will make serious inroads in the ranks of skilled workmen and will increase the difficulty of the labor problem, which is rapidly becoming acute. The declaration of Chairman Hurley, of the Shipping Board, that the working force now employed in the American shipyards must be increased from 200,000 to 500,000 has brought out clearly the pressing need of labor in the shipbuilding industry, while some official figures recently prepared show graphically the results of the indiscriminate drafting of men for the first division of the national army now training in cantonments. Fortunately, however, it can be stated that the War Department officials are already convinced of the unwisdom of the methods pursued in the first call and will make selections for the second division on an entirely different basis and one which will, to some extent at least, conserve the supply of skilled labor, especially that required for the manufacture of war material.

Skilled Men Drafted

The extent to which skilled workmen were drafted into the national army in the first call, regardless of the efforts made by manufacturers of munitions and other supplies for the Government to secure exemptions for valuable men, is being disclosed in reports received from the various training camps where a system of classifying all recruits according to trade or experience is now being put into force. An elaborate card index system has been adopted under which no less than 49 occupations are listed, the data being carefully gathered by a personnel officer who utilizes the information for the purpose of preserving the equilibrium of companies and regiments in the matter of the distribution of skilled workmen whose trades may be called into requisition by the exigencies of the service. As indicating the various fields of industry from which the selected men have been called, the registration for a single day at Camp Upton produced cards showing the presence of 26 machinists, 48 pipe fitters, 22 automobile repair men, 37 carpenters, 22 draftsmen, five firemen, 31 motor truck drivers, nine painters, 40 bookkeepers, six tailors, two dentists, seven druggists, 10 musicians, seven barbers, two moving picture operators, 12 sailors, 26 cooks, 10 grocers, 22 stenographers, 92 clerks, and three nurses. It is evident from these figures that the 600,000 men composing the first draft of the national army include a very large number of skilled mechanics who are now sorely needed in the manufacturing industries tributary to the war and whose places might well have been filled by men whose withdrawal would have had little or no effect upon those lines of industry upon which the Government is now relying to speed up the war program.

Not Enough Exempted

It is now conceded in official quarters that the exemption of skilled workmen in the first draft was by no means as extensive as it should have been. During the period of the sessions of the exemption boards throughout the country, the announcements issued by the War Department from day to day concerning the application of the draft rules deterred many managers and superintendents of munition factories and other manufacturing concerns having Government contracts or sub-contracts from making claims for valuable men. Officials of corporations hesitated to declare under oath that any of their men were "absolutely indispnsable" and the rulings of numerous exemption boards indicated that they would adhere to the principle that "no man is so valuable but that his place can be filled." Under these circumstances, it is not surprising that whole companies and regiments will prove to have been recruited from big industrial centers where the vital work for the prosecution of the war was being carried on.

Under the second call for recruits, the War Department will follow an entirely different plan. The new method may or may not be based upon that adopted within the past 30 days by the Canadian Government, which is just putting into force a new conscription law which became effective Oct. 15. If the expectations of the officials are realized, the new regulations will result in the drafting of men who can easily be spared by their families and by the important manufacturing industries of the country.

In selecting the first 600,000 men, the War Department took them in the order in which their numbers were drawn from the wheel in the lottery presided over by the Secretary of War. Only a sufficient number were examined to make up the first draft and less than one-fourth of the total number registered were examined to secure the desired quota. Under the new plan to be pursued to obtain the second contingent, all the remaining registrants will be divided into five classes or grades of eligibility and the so-called lottery numbers will be ignored except as they fix the rank of each registrant in his particular class. As a result a registrant, who, under the old system, would be the first to be called, for the second contingent may find himself at the top of the fifth class instead of at the head of the entire register, and may thus escape service, while the last man of the old list, who would have stood little chance of being included in the second call, may find himself drafted as the last man in the first class.

The New Classification

The new classification adopted by the Provost Marshal-General divides the remaining registrants into five groups indicating the order in which they will be called to service as follows:

CLASS I

1. Single men without dependent relatives.
2. Married man (or widower) with children, who habitually fails to support his family.
3. Married man dependent on wife for support.
4. Married man (or widower) with children, not usefully engaged; family supported by income independent of his labor.
5. Men not included in any other description in this or other classes.
6. Unskilled laborer.

CLASS II.

1. Married man or father of motherless children, usefully engaged, but family has sufficient income apart from his daily labor to afford reasonable adequate support during his absence.
2. Married man, no children; wife can support herself decently and without hardship.
3. Skilled farm laborer engaged in necessary industrial enterprise.
4. Skilled industrial laborer engaged in necessary agricultural enterprise.

CLASS III.

1. Man with foster children dependent on daily labor for support.
2. Man with aged, infirm, or invalid parents or grandparents dependent on daily labor for support.

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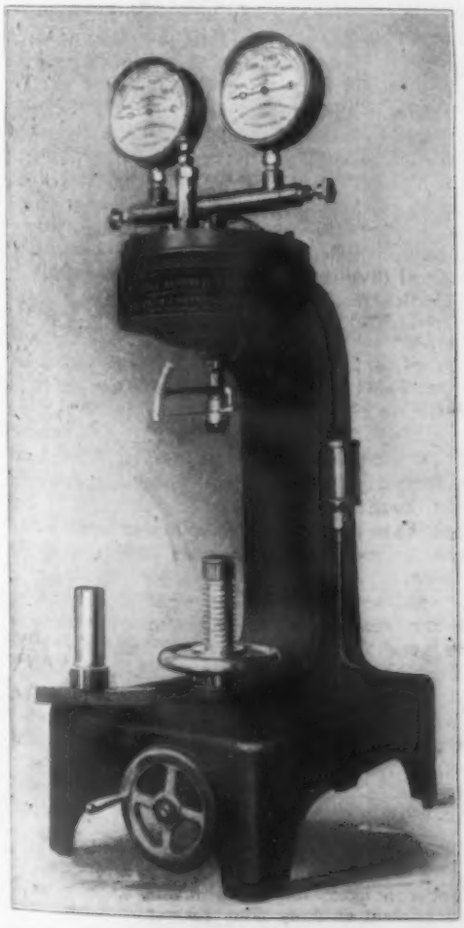
New Hardness Measuring Instrument

The Scientific Materials Co., 711 Forbes Street, Pittsburgh, is marketing a new instrument for measuring the hardness of metals which was designed by its president, Chester G. Fisher. The instrument employs the Brinell method of measuring the indentation made by a hardened steel ball when forced by a given pressure into the metal being tested.

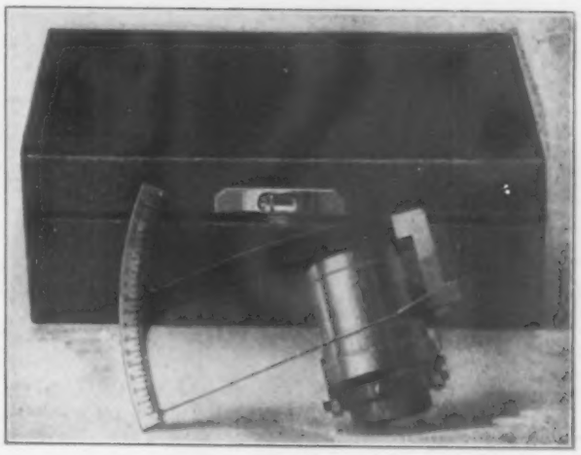
The machine is a hydraulic press with a heavy base in which the facilities for generating and transmitting the hydraulic power are provided and an upper neck cast integral with the base and supporting the hydraulic piston with the hardened steel testing ball. A movable stage, upon which the piece to be tested is placed, is provided together with two pressure gages, one for regular use in measuring the pressure applied and the other, which is reserved as a test gage, for checking the applied pressure readings. The liquid employed is glycerine and the press is constructed with a seal or trap of this fluid which is relied upon to prevent air from leaking in behind the plunger during compression.

The depth gage which is of new design is attached to the hydraulic piston carrying the hardened ball. The pointer of the gage may be moved independently and is set at zero when the ball comes in contact with the metal and the lower ring rests on the upper surface of the piece to be tested. By turning the spindle wheel attached to the front of the base, pressure is applied to the ball and the depth to which it penetrates the metal is indicated by the movement of the pointer over the scale. The movement of the pointer is magnified in the ratio of 50 to 1 thus making small differences in the depth of indentation quite perceptible on the scale. The depth of the indentation made by the ball can be read directly from the scale as fine as 0.01 mm.

One of the points emphasized in connection with the machine is that any spring which may occur in the goose-neck casting will not register on the depth gage, the entire gage moving downward with the piston when this occurs. If the position of the object should shift while the pressure is being applied this also does not affect the readings since it is compensated for by the universal joint attaching the lower ring to the gage



The Hardness of Metals Is Tested by the Brinnel Method in a Hydraulic Press Having Two Gages to Measure the Pressure Applied



The Depth to Which the Steel Ball Penetrates the Metal Is Measured by the Movement of the Pointer Over the Scale

Council of National Defense Has New Building

The Council of National Defense, its advisory commission and the subordinate committees of both bodies, including the War Industries Board, are now housed in a new but temporary office building, at Seventeenth and C streets, Washington. The building contains slightly in excess of 100,000 sq. ft. of space, with heating, toilet and fire protection facilities customary in office buildings. The type of construction is wood frame, with wire lath and stucco exterior and wall board finish inside. The work was started on Sept. 4, and on Oct. 23 the occupants moved in, a lapse of 49 days, not deducting for Sundays, holidays or bad weather. No night work was done.

The cost of the completed structure will be under $225,000, which is at the rate of less than $2.25 per sq. ft. of space, which is comparable with office rent paid for one year in many cities. So that it is fair to say that if the building is occupied for two years it will save its entire cost in office rent. The new building will house upward of 600 in the personnel of the Council and its subordinate bodies. Aside from this, office space has been given to the representatives of the purchasing commissions of the allied governments. The contract for the construction was awarded to the George A. Fuller Co. So far as is known, no similar structure has ever been attempted, namely, a building which combines the features of temporary frame construction with the characteristics of permanent office building construction.

Ferromanganese Imports in September

Ferromanganese imports for September, as furnished THE IRON AGE were 3402 gross tons or the largest for any month since April. This, however, is only about one-half of the average monthly receipts for the first four months of this year. The September imports were received as follows: Through the port of Philadelphia, 1902 tons; through Baltimore, 500 tons, and through New Orleans, 1000 tons, nothing having been received through Norfolk or New York.

The Miner-Morse Corporation, Erie, Pa., has contracted with Constable Bros. Co. for a modern steel warehouse, and ground will be broken within a few days. The building will be of steel with brick side walls, 60 by 120 ft., with a system of electric cranes and other equipment The company will carry a complete line of shafting, screw stock, cold drawn and hot rolled alloy steels, steel bars, refined iron bars, carbon and high speed tool steels.

The offices of the Laughlin-Barney Machinery Co are now located at 481 Union Arcade, Pittsburgh.

Widening Fields for Malleable Iron

Speakers at American Iron and Steel Institute Predict Greater Use of This Product—Large Possibilities in Making Munitions

At the meeting of the American Iron and Steel Institute at Cincinnati, Oct. 26, the paper by Henry F. Pope, president National Malleable Casting Co., Cleveland, on "Malleable Iron and Its Uses," which was published in THE IRON AGE of Nov. 1, was discussed by F. E. Nulsen, Missouri Malleable Iron Co., East St. Louis, Ill.; Prof. Enrique Touceda, Rensselaer Polytechnic Institute, Troy, N. Y.; Frank Lanahan, Fort Pitt Malleable Iron Co., Pittsburgh, and J. S. Haswell, Dayton Malleable Iron Co., Dayton, Ohio.

In his discussion Mr. Touceda said:

"I have listened with much pleasure to the interesting paper just read by Mr. Pope, who happens to be one of a few of the manufacturers who make both steel as well as malleable iron castings. For this reason I attach great weight to his remarks in connection with a comparison of these two products. He has admirably set forth the reasons why there will always be a large demand for the malleable iron casting, and why it has, by reason of low melting point, superior fluidity, high elastic limit and low cost, a certain field from which it is not going to be forced by any product at present on the market. To the foregoing characteristics I would add those of superior soundness and ease of machining. I do not share, in entirety, his comparisons of the physical characteristics of malleable with those of wrought iron, but the former certainly possesses a superior elastic limit, and is more rust resistant than the latter.

"When it is considered that malleable iron is a cast material and that wrought iron is hot worked, that their physical characteristics should be as close as they are is truly wonderful.

Enthusiastic About Malleable

"I have always been very enthusiastic about malleable iron as a metal, even from the very start of my practical experience with it, back in 1896. I felt then that I could predict for it a bright future and great possibilities provided the manufacturer would depart from the crude methods at that time in vogue and realize that he could not attain refinements with equipment that he could not control, etc. That he has certainly done this will be instantly apparent to all who will take the trouble to visit many of the up-to-date plants, where they will find that the most approved furnaces and ovens, pyrometer equipments, testing departments, laboratories and live organizations have replaced the old order of things.

Field Will Widen

"I not only heartily endorse his thought that there is a certain field for the malleable casting that will always be occupied by it to the exclusion of any other kind of casting, but in addition feel strongly that this field is going to be widened in the very near future, because I have lately seen castings of so superior a quality that, if such can be uniformly produced, there is no question whatever of their marketability in huge quantity.

"It must be borne in mind that the most important step in the manufacture of this product is in the heat treatment of the white iron casting. We all know that the efficacy with which this can be done depends, first, upon one's knowledge of the scientific fundamentals underlying this process, and, second, in the possession of equipment that will enable one to faithfully carry out what these fundamentals indicate must be done. Improvement started with a realization of these facts by the manufacturer, and to-day his aim is to adopt any suggestion, introduce any change or install any equipment that may give promise of increasing the uniformity and physical characteristics of his product.

"It is this disposition on his part that gives me faith in the thought that what I have predicted will come true. Not the least gratifying and encouraging sign is the increasing attendance at the meetings of the various technical societies of so many engaged in this industry. Where five or six years ago this was the exception, it is to-day the rule. This is but natural, for with each step toward progress comes the desire to learn more, and I know no surer, easier and more congenial manner to absorb knowledge than through contact with the talented men who form these bodies, and from a study of the papers printed in their transactions, many of which are classic."

Mr. Nulsen's Views

"Mr. Pope's paper, in spite of its brevity," said Mr. Nulsen, "has so fully and completely covered the ground that he has left no new points for me to bring out. Nor can I differ with him on a single statement he has made. I can only therefore discuss and amplify some of the points he has brought out.

"As Mr. Pope says, the manufacturers of agricultural implements were the first to recognize the merits of malleable iron. American farm implements, because of their superiority, have found their way to every part of the globe. Their lightness and great strength have made them successful in competition with foreign-made implements. The ability of the American manufacturer to build a lighter and stronger machine than his competitor was due almost entirely to his liberal use of malleable iron; malleable iron, by the way, being a product which for some reason is but very little known in Europe, its manufacture being almost an exclusively American industry.

"Malleable iron possesses one quality which Mr. Pope has not brought out—its ability to resist wear. Several manufacturers have for years been making wagon skeins of this material and guarantee their malleable skeins to outwear two or three sets of steel skeins, a guarantee they have no difficulty in making good on.

Fine Bearing Surface

"The reason that malleable iron makes a fine bearing surface is because of the presence of a large percentage of graphitic carbon.

"The field for malleable iron has been greatly broadened in the past few years, due to the high cost and inability to secure deliveries on brass castings, aluminum castings and forgings. A vast number of parts, formerly made of these materials, have therefore recently been made of malleable iron. Because of its cheapness and the satisfaction it has given it will probably in most cases be used permanently in these new fields.

"I want to lay stress on what Mr. Pope has said about the resistance to oxidation of malleable iron. I have seen tie plates made of malleable iron which have been in use for 10 or 12 years, and which showed scarcely a depreciable loss in thickness due to oxidation, whereas, the average life of steel tie plates, due to wastage from oxidation, is about five or six years. In this field a higher first cost has prevented the extensive use of malleable iron tie plates. Due to the present high cost of steel a malleable tie plate can be produced to-day as cheaply as a steel one and railroad engineers would do well to take advantage of this condition and thoroughly test the malleable tie plate.

Heat Treatment

"We are hearing a great deal these days of the advantages of heat treatment. Heat treatment reduces the crystalline structure, removes internal strains

and consequently greatly increases the ability of the material to withstand shock. Malleable iron, because of its process of manufacture, is essentially a heat-treated product. Its crystalline structure is very fine and to this quality is due its ability to withstand shock and vibration and to stand up well in extremely cold weather.

Quality Improving

"The one great argument used against the more extensive use of malleable iron has been its lack of dependability. That argument, however, is rapidly disappearing. The old rule of thumb in the manufacture of malleable iron has been replaced by scientific methods. Only a decade ago it was the exception rather than the rule to see a malleable iron plant equipped with a chemical laboratory. To-day every first-class institution is not only equipped with a chemical laboratory but is equipped to make microscopic examinations which have been found to be a greater aid in the production of a uniform quality of metal than the chemical analysis. This equipment has shown the importance of temperature control, and annealing ovens in most up-to-date plants are now equipped with pyrometers connected with recording instruments, making it possible to secure almost absolute uniformity of results.

"Until all plants have introduced scientific methods of manufacture it would be well for every consumer of malleable iron to heed Mr. Pope's advice and have a small test lug cast on every casting, which will conclusively show the quality of each piece and prevent iron of inferior quality getting into service."

Mr. Lanahan's Discussion

Mr. Lanahan opened his remarks by saying it is true, as Mr. Pope stated, that the characteristics of malleable iron are little understood, and while this undoubtedly is true with respect to a portion of users, it is an unpleasant commentary to say that it applies equally well to a small number of foundries. Continuing, he said:

"Fortunately, in recent years there has been a decided change, for a few manufacturers were convinced there were latent virtues in this product, and they with determination worked to develop it to the fullest extent. Quite naturally, advantage was taken of the laboratory, and the inevitable research, finding solutions to these perplexing problems with results that were extremely gratifying.

"It is to be doubted very much whether the pioneer of the malleable iron industry of this country, in the early twenties—Seth Boyden—had the remotest idea of the wonderful future this material had in store.

Old Practice Abandoned

"The malleable iron industry, following the example of the larger iron and steel mills, had to eliminate the 'rule of thumb' practice so prevalent in foundries until a comparatively recent date. The fogy ideas of the old-timers became so entrenched in the minds of foundry operators that they placed sole reliance upon the 'magic eye' of the superintendent. So self-satisfied in their own conceit were these individuals that they regarded their knowledge as to the mysteries of iron much superior to the student of chemistry. Not without much misgiving and dubious predictions as to the outcome did the practice of mixing the iron become the lawful possession of the chemist who had previously been considered a useless personage about the plant. The necessity of knowing the chemical constituents of the raw material purchased was not until recently deemed necessary. This was likewise true of the product.

"Through this avenue, however, the correct ratios of the elements were so worked out and it is now known that with a certain content of carbon there should be a properly balanced silicon to give the physical properties sought. This is likewise true with respect to the sulphur and manganese. The adherence to these known ratios assures the manufacturer physical properties of the highest order.

Methods of Testing

"To appreciate the value of these results it was necessary to establish definite methods of testing the product. Test bars are cast from each heat for static loading, while wedges likewise are made for the dynamic test. The foundries making car castings to-day work under a specification, the minimum requirement of which is 45,000 lb. per square inch tensile strength with an elongation of 7½ per cent measured in 2 in. From the results of the majority of the manufacturers working under this specification it would seem that at a near date it will be possible to increase the requirements for this particular class of material.

"A large majority of the concerns are producing an iron much higher in physical properties than called for in this specification. Here are the results of one firm for the past 12 months, which specializes on car castings. The average results were as follows:

51,000 lb. per sq. in.....Ultimate strength
13 per cent.....Elongation
18.5 per cent.....Reduction in area

"The maximum of these tests was approximately 57,000 lb. per square inch ultimate, 27.3 per cent elongation and 34 per cent reduction. You will readily see this shows uniformity of operation. It is not uncommon to produce an iron with a tensile strength exceeding 60,000 lb. per square inch.

Sound Castings

"In conjunction with the improved quality of product obtainable to-day the founder is producing his castings sound. The question of feeding the castings with heads and risers to insure soundness went hand in hand with the increased strength. There was at one time a fallacy that a malleable iron casting could not be manufactured with a section in excess of ½ in. To-day, in making castings for car work, foundries have not encountered any sections that engender trouble. We are making quite a tonnage of castings ranging in thickness from 1¼ in. to 1½ in.

"The perfecting of the process of making good malleable iron is likened to the adage, 'Perfection is made up of trifles, but perfection itself is no trifle.'

"The excessive demands placed upon the malleable iron industry have been due in a large measure to the advent of the automobile. It is in this field that malleable iron has played an important part in which machinability and strength have been paramount. The automobile manufacturer desires a metal that will machine easily, combined with strength, and yet within a limited weight, so as not to lumber the car with excessive material.

Castings for Cars

"Quite frequently in the past year and a half have the malleable foundries been called upon to make some castings for railway cars, where malleable iron had not been considered previously. This would indicate a renewal of faith in a material that can be depended upon when made by a reputable manufacturer, if the sections are properly designed by the engineer.

"Attention need only be called to the great possibility of malleable iron for munitions in the way of grenades, fuses and various forms of bombs, to show what an important part this material can take in upholding the arm of our Government in the great war of democracy. This industry, in common with every allied craft composing the American Iron and Steel Institute, holds itself in readiness to answer to the utmost of its ability the call of the President and Council on National Defense to serve the Government, with patriotic fervor to the fullest extent of the capacity of the foundries and the energy of their employees."

Malleable for Automobiles

John C. Haswell, president Dayton Malleable Iron Co., Dayton, Ohio, in discussing Mr. Pope's paper said:

"Mr. Pope has ably covered in a brief and comprehensive paper a vast field, touching as he has upon every phase of the manufacture and use of malleable

(*Continued on page* 1171)

Electric Furnaces in Non-Ferrous Industry

Melting Types in the Experimental and Commercial Stage—Practical Results of the Baily, Snyder and Rennerfelt Units

IT is the opinion of Dwight D. Miller, of the Society for Electrical Development, New York, that the present status of the application of the electric furnace in the non-ferrous industry is no further developed than electric melting was in the steel industry 10 years ago. In a paper, "The Electric Furnace as a Medium for Heating Non-Ferrous Metals," before the American Institute of Metals at Boston, Sept. 24, 1917, Mr. Miller discussed the present status of this subject. A portion of this paper relating directly to this was as follows:

As to electric furnaces for use in the non-ferrous field, there is under way at present much experimentation with not a great deal of actual accomplishment in so far as the number of furnaces in commercial use are concerned.

The object of this experimentation is to develop an electric furnace which shall have not only high thermal efficiency but which shall also be able to handle yellow brass and various alloys with small metal loss. In working out this problem simplicity in construction and reliability of operation should take precedence.

What is really needed is a combination of electrical and metallurgical knowledge. It is a comparatively easy matter for the electrical engineer to turn out a furnace which combines simplicity and reliability with high efficiency—one which will give ample heat for the process to be performed, but unless he knows just how the application of this heat at a certain temperature is going to affect the metals composing the alloys which volatilize at comparatively low temperatures, the metal losses will be large. To correct this condition metallurgical knowledge is essential.

Alloys of low zinc content or that melt at low temperatures do not present the same difficulty as do those with high zinc content which must be poured at the higher temperatures.

Furnaces in Experimental Stage

Those furnaces which have been designed and are now under experimentation include:

The Gillett furnace; patent assigned to the Government. Bureau of Mines.

General Electric furnace; controlled by General Electric Co., Schenectady, N. Y.

Conley furnace; controlled by Florance and Hampton. 1270 Broadway, New York.

Thomson-Fitz Gerald furnace; controlled by John Thomson, 253 Broadway, New York.

Northrup furnace; controlled by Ajax Metal Co., Philadelphia, Pa.

Hering Pinch Effect furnace; controlled by Carl Hering, Philadelphia. An option is held by the Ajax Metal Co., for the handling of brass in this furnace.

Bennett furnace; controlled by Scovill Manufacturing Co., Waterbury, Conn.

The Gillett furnace, invented by Dr. H. W. Gillett, is an indirect arc furnace so designed as to bring about a violent agitation of the charge by a rocking motion. The writer was privileged to witness some of the tests that have been going on during the summer, but he is not in a position to reveal any of the results attained.

While the General Electric furnace has been put in the experimental stage, one has been shipped to the Crane Co., Chicago. It will be shortly handling red brass. The furnace, the invention of Edgar F. Collins, is what might be termed a smothered arc furnace—the heating effect taking place both by the arc and by resistance. It is poured by tilting and designed for single, two or three-phase operation, on 25 or 60 cycles, and is made in three sizes, for 1500, 1000 and 500 lb. melted in one hour. The current is brought in through carbon electrodes as in the case of the arc furnace.

On either side of the hearth are two troughs in the bottom of which are located fixed carbon blocks. These troughs are then filled with crushed coke, the current being conveyed to the troughs by the moveable top electrodes which are plunged into this material. There is a critical depth or thickness of this crushed coke surrounding both the top and bottom electrodes, which gives the best results.

Tests made at the General Electric works by their own engineers produced the following results:

When remelting red brass for castings, pouring at a temperature of 2000 deg. Fahr., the power consumption was approximately 250 kw. per ton or 12.5 kw. per 100 lb.

When making red brass for rolling mill practice pouring at 2200 deg. Fahr., the power input was approximately 325 kw. per ton or 16.25 kw. per 100 lb.

The electrode consumption was 4 in. in a length of 5 in diameter electrodes per 24 hr., or 1 in. per electrode.

The efficiency ranges from 70 to 77 per cent according to size of furnace and skill of handling with a power factor of 96 to 98 per cent.

Tests on brass made in the furnace showed 7 to 8 per cent greater tensile strength due to the absence of oxides and impurities.

The Conley furnace, invented by William H. Hampton, is a resistance furnace of the molded resistor type in that the charge is melted in an open graphite crucible which closes the secondary circuit. The furnace is supported on trunnions and is poured by tilting. The current is brought in by bus bars and flexible cables, the ends of which are permanently connected to the sides of the crucible by graphite cement. The crucible is contained in a rectangular enclosure made of iron plates and packed with Kiselguhr, the heating effect being obtained by radiation through the crucible walls. The furnace is designed for single-phase operation at prevailing frequences. Regarding the Thomson-Fitz Gerald furnace, invented jointly by John Thomson and Francis A. J. Fitz Gerald, there is not much to say now, since it is not being pushed. The apparatus is designed for the purification of spelter containing deleterious metals by distillation in an electric furnace and has been tested mainly for the fuming of impure zinc and condensing it as a highly refined metal. It is a resistance furnace of the reverberatory type—the heating effect taking place by radiation from specially formed resistors and reflected to the charge from the walls and roof of the furnace enclosure. It is used in conjunction with the condenser into which the fumes escape through specially constructed passages.

Mr. Thomson advises that it is suitable for melting brass and bronze, which can be carried on simultaneously by sub-dividing the open retort. The furnace underwent a series of tests at the Fitz Gerald laboratories, Niagara Falls, and while it was successful in producing extremely pure zinc, no other data is available as to its performance for publication. It has never been in commercial use.

The Northrup furnace, invented by Prof. Edward F. Northrup of Princeton University, has been under experimentation for the past year and considerable data has been obtained. The furnace is a new departure in design and principle of operation. It is readily adapted to handle almost any kind of metal, and uses an oscillating current at very high voltage, being stepped up to 10,000 volts. The oscillations are produced by discharges from a condenser and the energy conducted to a series of closed coils which are mounted concentrically and insulated from each other. These coils completely surround a cylindrical crucible in which the charge is melted. So far as the writer is aware nothing at present is being done with the Hering pinch effect furnace. There is no information as yet available relative to the Bennett furnace at the Scovill Manufacturing Co.

It will be interesting to note whether as these various furnaces are put into commercial use, they actually meet the claims which have been made on the basis purely of design or as the result of experimental tests.

Furnaces in Commercial Use

The furnaces that are in actual commercial use handling copper-zinc alloys include:

The Ajax-Wyatt furnace; controlled by the Ajax Metal Co., Philadelphia.

The Foley furnace; controlled by Charles B. Foley, Inc., 170 Broadway, New York.

The Baily furnace; controlled by The Electric Furnace Co. of America, Alliance, Ohio.

The Rennerfelt furnace; represented by Hamilton & Hansel, 17 Battery Place, New York.

The Snyder furnace; controlled by The Industrial Electric Furnace Co., 53 West Jackson Boulevard, Chicago.

The Hoskins furnace; controlled by Hoskins Mfg. Co., Detroit, Mich.

The Ajax-Wyatt furnace is best adapted to 24-hr. continuous operation handling the same alloy. In the furnace the enclosure is of metal, cylindrical in form, and contains the pool of metal. It has a V-shaped lower portion containing channels through which the metal flows and in which the process is really carried on, the heating effect taking place in these channels. The electrodes are usually of carbon. A list of furnaces installed or ordered follows:

American Brass Co., Waterbury, Conn., 2-60 kw.; Bridgeport Brass Co., Bridgeport, Conn.; 28-30 kw.; Waclark Wire Co., Bayway, N. J., 1-30 kw.; Washington Navy Yard, Washington, 1-30 kw.; Browns Copper and Brass Rolling Mill, New Toronto, Can., 1-30 kw.; Stamford Rolling Mill, Springdale, Conn., 1-60 kw.

The Foley furnace was invented by Charles B. Foley and while patent applications have been made the writer is unaware of any patents having been issued up to the present time.

Mr. Foley states that there are four furnaces at the Bristol Brass Co., Bristol, Conn.—one of 1000 lb. capacity in operation and three of 3000 lb. capacity each about to start up. As this statement was made late in June the three large furnaces are probably in operation by this time. It very closely resembles the Ajax-Wyatt furnace in both construction and method of operation.

The Baily Furnace

The Baily furnace, after establishing its position for the heat treatment of metals, has now likewise established itself firmly for the melting of alloys and metals in the non-ferrous field. Among its strong points, two stand out prominently, its simplicity of construction and reliability of operation—points which are amply substantiated by the experience of those companies which have had it in use for some time.

This furnace is a resistance furnace of the reverberatory type. [It has been described in THE IRON AGE.]

Mr. Baily, in a recent paper, likens his furnace to "a closed box of fire brick in which are two glowers, which may be likened to huge incandescent lamp filaments."

Regarding the opinions of those using the Baily furnace, three of whom the writer visited, it can be said that they are well pleased with its performance.

William A. Rogers Co., Ltd., state that there are practically no metal losses handling silver which is done in two crucibles holding approximately 500 oz. each, and that the metal appears more homogeneous. Pure silver, copper anodes, scraps and chlorides are melted, thus recovering the silver from their electrolytic process for plating.

Regarding the annealing furnaces, two of which are in use for annealing German silver and brass blanks, 9 tons are treated in 10 hr. annealing at 1450 deg. Fahr. with 175 kw., although the furnaces are rated at 200 kw. for this work.

The Otis Elevator Co. has two annealing furnaces, 300 kw. and 150 kw. capacity, for treating steel and brass castings. About the only trouble experienced has been an occasional crackling of the resistor troughs necessitating patching.

The castings treated vary from 3 up to 7000 lb. each. The larger furnace can handle a charge up to 12,000 lb. of metal, while 7500 lb. can be charged in the small furnace. The metal is treated at a temperature ranging from 1500 to 1850 deg. Fahr. and held anywhere from 16 to 20 hr. Starting with a furnace temperature of approximately 750 deg. Fahr. and running to an annealing temperature of 1600 deg. Fahr, at which time the current was shut off, the cost per ton was approximately $7, the total time the power was on being 19¾ hr.

At the Lumen Bearing Co., Buffalo, copper, Lumen metal, phosphor and manganese bronze are melted. The charge is 600 lb., consisting of scrap and ingots. Short test runs on both Lumen metal and phosphor bronze under far from ideal conditions resulted in a consumption of 12 kw-hr. for Lumen and 22 kw.-hr. for phosphor bronze per 100 lb. It is stated, however, that as soon as the company operates 10 hr. per day six days in the week, it expects to reduce these figures to 10 and 17.5 kw. respectively, based on making the hardener, used with Lumen metal and forming 28 per cent of the melt, separately in a crucible.

The Lumen metal is poured from 1250 to 1600 deg. Fahr.; the phosphor bronze at approximately 2200 deg. Fahr. The heats average about one hour, so that eight or nine heats can be made in a 10-hr. day, according to conditions. The metal loss will vary between 2½ to 3½ per cent for the Lumen metal, the test on the phosphor bronze showing 2 per cent. It is possible to charge manganese bronze immediately after a Lumen heat, since the zinc which might be left in the furnace would have no injurious effect on the manganese bronze.

Of the two furnaces installed one has been in operation for 6 months and the other 2 months. During this time there has been only one renewal of the bottom costing about $50, with some slight patching of same. The second furnace, however, is not run every day.

List of Baily Furnaces Installed or Contracted For

No.	Kw. Capacity	Type	Purpose	Company	Location	Cap., per Hr.	Temp., Deg. F.	Date Installed
1	500	Non-tilting	Melting aluminum bronze	U. S. Aluminum Co.	Massena, N. Y.	1 ton	1600	(On order)
1	105	Tilting	Melting lumen metal	Lumen Bearing Co.	Buffalo	1000 lb.	1300	1916
1	105	Tilting	Melting manganese bronze and yellow brass	Lumen Bearing Co.	Buffalo	600 lb.	2100	1917
1	105	Tilting	Melting yellow brass	Baltimore Copper Smelting & Rolling Co.	Baltimore, Md.	600 lb.	2100	(On order)
1	105	Tilting	Melting yellow brass	Hays Mfg. Co.	Erie, Pa.	600 lb.	2100	(On order)
1	105	Tilting	Melting yellow brass	Bridgeport Brass Co.	Bridgeport, Conn.	600 lb.	2100	(On order)
1	25	Pit (Using Crucibles)	Melting silver	Wm. A. Rogers, Ltd.	Niagara Falls, N. Y.	1000 oz.	2300	1914
1	200	Pusher	Brass annealing	Wm. A. Rogers, Ltd.	Niagara Falls, N. Y.	1 ton	1200	1915
1	150	Pusher continuous	Carbonizing	New England Westinghouse	Springfield, Mass.	1000 lb.	1600	1916
1	150	Car-annealing	Heating steel	Otis Elevator Co.	Buffalo	1000 lb.	1600	1915
1	300	Car-annealing	Annealing	Otis Elevator Co.	Buffalo	1 ton	1600	1916
1	150	Car-annealing	Annealing locomotive axles	Valley Steel Co.	E. St. Louis, Ill.	1000 lb.	1600	1917
1	100	Car-annealing	Annealing aluminum	U. S. Aluminum Co.	Massena, N. Y.	1000 lb.	700	1915
1	300	Car-annealing	Annealing steel castings	Stavanger Electro Stahlwerk	Stavanger, Norway	1 ton	1600	1917
3	600	Automatic-heat treating	Steel draw bar knuckles	National Malleable Castings Co.	Sharon, Pa. (each heat)	3 ton	1600	1914-6
3	300	Automatic-heat treating	Steel draw bar knuckles	National Malleable Castings Co.	Sharon, Pa. (each heat)	3 ton	1050	1914-6
1	600	Automatic-heat treating	Crankshafts	Ingalls-Shepard Forging Co.	Harvey, Ill.	3 ton	1600	(On order)
1	300	Automatic-heat treating	Crankshafts	Ingalls-Shepard Forging Co.	Buffalo	200 lb.	1600	(On order)
1	300	Continuous-heat treating	12-in. high explosive shells	Midvale Steel Co.	Philadelphia	3 ton	1050	(On order)
1	600	Continuous annealing	Steel castings	Morris & Baily Steel Co.	Philadelphia	1½ ton	1850	1916
1	40	Hearth heat treating	Automobile gears	Pierce-Arrow Motor Co.	Wilson, Pa.	6 ton	1400	(On order)

(Continued on page 1172)

Important Problems Are Considered

Meeting of Machine-Tool Manufacturers Discusses Matters of Vital Interest, Especially Those Growing Out of the War

A machine-tool meeting under the auspices of the Machinery Section of the National Supply and Machinery Dealers' Association was held at the Hotel Astor, New York, on Wednesday, Oct. 31. A number of subjects of interest to machine-tool dealers were discussed, among them being the machine-tool dealers' economic position, the war profits tax, co-operation with the Government, market prospects and means of increasing good will between manufacturers and their agents.

Capt. Tyler W. Carlisle of the Small Arms Division, Ordnance Department, United States Army, formerly with the Strong, Hammond & Carlisle Co., machine-tool dealer, Cleveland, gave an interesting talk on priority matters, commandeering and other phases of Government purchasing of machine tools. Captain Carlisle said that under the direction of George E. Merryweather, president Motch & Merryweather Machinery Co., Cleveland, who now heads the Machine Tool Section of the War Industries Board, lists of the Government's machine-tool requirements for the next six months have been compiled. He said that dealers had been requested to give complete lists of tools in stock, and from these stocks the Government will order whenever possible.

He explained the difference between a priority order and a commandeering order, and said that not more than 100 commandeering orders, in all, had been issued. No one but the Secretary of War or the Secretary of Navy can sign a commandeering order, he said. He discussed the recent action taken to obtain for the use of the United States Government the tools in export warehouses in New York and elsewhere. The tools seized in New York, alone, were valued at about $10,000,000. Some of them had been in storage for two and a half years. Many were consigned to Sweden, so many in fact that it was obvious that a considerable quantity was for re-exportation to Germany. A large proportion of these tools was designed to cut metric threads and will be returned to the builders for changing the threads.

Captain Carlisle discussed at some length the question of dealers shipping tools from stock from one territory to another. Western dealers, whose stocks have been more complete than those of Eastern dealers, have been receiving orders from the Government for shipment of tools from stock into Eastern territories, and Eastern dealers have in some instances, claimed one half the commission. It was intimated that shipments, in a few cases, had been held up pending discussions between dealers as to their respective rights. Captain Carlisle asked the dealers to be patriotic and, if necessary, waive the question of profits in the interest of the Government.

Competition between different Government departments in buying machine tools will shortly be eliminated by a system of co-operating in purchasing now being worked out, all purchases going through a central bureau. This is a part of the plan on which Mr. Merryweather is engaged. Captain Carlisle paid a tribute to the great service which J. R. Van Dyk of the Van Dyk-Churchill Co., New York, is rendering the Government in handling export matters for the Exports Administrative Board.

Mr. Viall's Address

W. A. Viall, Brown & Sharpe Mfg. Co., Providence, R. I., talked to the dealers from the manufacturer's viewpoint on several matters of current interest, particularly the scarcity of raw material, labor scarcity, the railway and freight car situation, the Government's requirements and the need for their satisfaction before any attention is given to civilian business, the Government prices on steel and the fact that orders are not being accepted for prompt delivery by manufacturers at the Government prices, and the coal and coke situation. Mr. Viall predicted that any manufacturer not engaged in making necessities is going to get a "short deal" before the winter has passed. He cited two plants which have been converted from making luxuries to war necessities, one being the silverware factory of the Gorham Co., Providence, R. I., which is now making shell cases, and a New England toy manufacturer, who has converted his plant from toys to trench periscopes.

The coal situation is more serious than many people realize, according to Mr. Viall, and several drastic measures have been suggested for its relief, one being the suspension of passenger traffic on railroads for one or two days each week. Mr. Viall doubted, however, that this extremity would have to be resorted to. He emphasized the scarcity of labor and spoke of the success which has attended the introduction of female help in some machine shops. On lighter forms of work, women had proved themselves very capable, he said, and were well pleased with the opportunity to make the high scale of wages paid. The extent of the labor shortage is indicated by the fact that in New England it has been difficult to find workmen for the simple operation of unloading pig iron.

Price Fixing

Mr. Viall said that price fixing had not proved successful in other countries, but he hoped it might work out better here. Present indications are, he said, that there will be a scarcity of material. Mr. Viall deplored the fact that there have been rumors of profiteering by builders of machine tools, and said he thought that if the Government decided to fix prices of tools, it would be found that present prices were not out of line with present costs of material and labor.

In discussing transportation difficulties, he said that it is necessary for manufacturers to send car tracers along with practically every large, urgent shipment to facilitate its progress. There were reports, Mr. Viall said, that shipments of machine tools to the Allies might be curtailed. For example, dealers in those countries will not be permitted to receive shipments of tools for stock, but will be limited to actual requirements of the war industries.

Machine tool builders, he concluded, are being pushed to the utmost to supply the Government's tremendous needs, and he emphasized the necessity of every builder concentrating on the lines of tools which are most urgently needed for war work, and cutting down output of the others.

Taxes Discussed

Most of the afternoon session was devoted to a discussion of war profits taxes, trade acceptances, collections and similar matters affecting the financial conduct of the machine-tool business. It developed from the discussion that many dealers are worried as to how to raise the money to pay war taxes. While it it true that many of them have made large profits, these profits have either been divided or have been used in the business because of the greater amount of capital needed to do business in this era of high prices. It was the sentiment of a majority that stocks must be reduced or money borrowed at the bank to meet the Government tax.

Dealers complained that collections are slower than

ever known before. Companies which have always paid their bills in 30 days are now taking 60 to 90 days. Such companies are frequently on Government work, and their excuse for deferring payments is that the red tape at Washington causes a delay in the receipt of their money from the Government. Several dealers said that though the factories insist on dealers discounting bills within 10 days from date of invoice, it was impossible to sell to the trade on these terms, the average buyer insisting on taking his discount within 10 days from date of receipt of bill of lading. This means that the money invested in a machine-tool purchase is frequently tied up without interest for the several weeks required for transportation.

Trade acceptances were urged as a means of obtaining money more promptly. The general adoption of this method would take many of the creaks out of the credit system, it was maintained. Smaller buyers are not averse to the trade acceptance plan, but the larger concerns will have nothing to do with it according to the reports of several dealers who have attempted to inaugurate this method of payment. It was stated that it is becoming more difficult for business houses to borrow money at the banks, owing to the large requirements for Government purposes. It was the general idea that jobbers carrying large investments would be compelled to insist upon shorter terms of payments or reduce their stocks to raise the money needed for meeting the war taxes and the conduct of their business on conservative lines.

The report of the secretary, Thomas A. Fernley, Philadelphia, was in part as follows:

Secretary's Report

"The past year has been very active in the machinery section of this association, largely because of the peculiar problems arising out of war conditions. At the outset, it affords your secretary considerable pleasure to report that the Machinery Section of the association has been of value to the National Government in locating machine tools which have been needed for various arsenals and for numerous private contractors doing work for the Government in which machine tools have been required and have been extremely difficult to secure.

"Several of our members are now connected with various Government departments and among these we will mention the names of Tyler W. Carlisle, formerly with the Strong, Carlisle & Hammond Co., Cleveland, and Charles T. Bush of Charles A. Strelinger Co., Detroit, Mich. The association has assured both of these gentlemen as well as other Government officials interested in the machinery business that our members are willing and glad to be of all possible assistance in connection with government business.

"The association has been of service to members in securing orders from the Government to accelerate the shipment of tools needed to complete important Government work. The association has laid before the Government departments the fact regarding the service rendered by the regularly established machine-tool dealer and it seems that this character of information was necessary because of the large number of irresponsible dealers having no fixed places of business who were endeavoring to supply the Government with tools and whose failure to carry out their contracts have been the cause of much annoyance and disappointment and loss to our Government in its various departments.

"Our position has been that the regularly established dealer can be of great service to the Government depots where machine tools are needed and that as the dealer is actually an extension of the manufacturer's selling department he is a helpful economic factor in government business.

"Lists of machine tool dealers throughout the United States have been supplied to Government departments upon request and our members have individually, doubtless received numerous inquiries from the department as the result of the fact that their names have been supplied by this association. In the event that any house has not received such inquiry, the secretary will be glad to receive its name and supply it to the Government departments for their consideration and information.

Priority Problems

"Some of the important matters which will come before you to-day for consideration will be that of priority in connection with shipment to your stock. We are all familiar with the fact that Class A under the Priority Committee's regulations comprises war work, that is to say orders and work urgently necessary in carrying on the war, such as arms, ammunition, ships, etc., and the material required in the manufacture of the same. It has been the thought of our members that much of the machine tool and contracting machinery and equipment business should come under Class C, which comprises orders and work which while not primarily designed for the prosecution of the war, yet are of public interest and essential to the national welfare, or otherwise of exceptional importance.

"Many of our members have rendered special service to the Government in supplying tools and equipment which has been of particular service to facilitate the prompt completion of important work. Had there been in effect, rules and regulations which would have hampered the quick manufacture and shipment of such goods, the service referred to could not have been performed as efficiently as it was. It is not the desire of any of the members of the association to interfere with shipments of arms, ammunition and other similar goods. It is their desire to help and to carry a stock necessary for the many enterprises which assist in the successful and efficient prosecution of the war.

Standard Thread

"Your association has done considerable work in the matter of bringing about the universal adoption of the United States Standard thread instead of continuing the use of the V thread which has not been uniform and which has been the cause of considerable trouble to members both in the matter of the conflicting standard and in the matter of maintaining the duplicate stock.

"A machinery committee has been actively at work for the past six months in giving close attention to the work of the Machinery Section of this Association. They have been directing much of the work which has been done in the Secretary's office on strictly machine tool matters and it is our belief that the Machine Tool Section of this Association can continue to render active service for the conservation of the interest of machine tool distributors, in numerous directions. It is most helpful to receive the guidance of a body of trained machinery men and our Association is extended to them."

Officers Elected

Officers of the machinery section and members of the machinery committee are as follows:

President, H. W. Strong, the Strong, Carlisle & Hammond Co., Cleveland; vice-president, Crannell Morgan, the Hardware & Supply Co., Akron, Ohio; advisory secretary-treasurer, T. James Fernley, Philadelphia, and secretary-treasurer, Thomas A. Fernley, Philadelphia.

Executive Committee: W. T. Todd, Somers, Fitler & Todd Co., Pittsburgh; E. B. Hunn, the C. S. Mersick Co., New Haven, Conn.; George Vonnegut, Vonnegut Hardware Co., Indianapolis, and J. D. Nicklis, Manning, Maxwell & Moore, Inc., New York.

Advisory Board: Edgar E. Strong, the Strong, Carlisle & Hammond Co., Cleveland; George Puchta, the Queen City Supply Co., Cincinnati; W. M. Pattison, the W. M. Pattison Supply Co., Cleveland; W. L. Rodgers, Pittsburgh Gage & Supply Co., Pittsburgh, and Charles S. Farquhar, Chandler & Farquhar Co., Boston.

Machinery Committee: Anton Vonnegut, Chairman, Vonnegut Machinery Co., Indianapolis; L. H. Swind, Swind Machinery Co., Philadelphia; George H. Cherrington, Brown & Zortman Machinery Co., Pittsburgh; Edward P. Welles, Charles H. Besly & Co., Chicago, and Charles T. Bush, Charles A. Strelinger Co., Detroit.

T. Bissell Everson, dealer in second-hand machinery, has removed from the German National Bank Building to the Granite Building, 313 Sixth Avenue, Pittsburgh.

SECONDARY METALS IN 1916

Huge Increase in Value of Metals Recovered from Scrap

WASHINGTON, Nov. 5.—The value of secondary metals (exclusive of iron, steel, the ferroalloys, gold, silver and platinum) recovered in the United States amounted to $265,377,856 in the calendar year 1916, as compared with $114,304,930 in 1915, according to a report just issued by the United States Geological Survey. While the increase was due in part to higher average prices, it was to a great extent attributable to the larger use of metals of all kinds, the year 1916 having been one of unprecedented activity among dealers in and refiners and smelters of waste metals. "Secondary metals," as the term is employed by the Survey, are those recovered from scrap, sweepings, skimmings and drosses and are so called to distinguish them from the metals derived directly from ores, which are termed primary metals.

It is difficult to estimate the value of ferrous scrap reclaimed in 1916. Some of the scrap ferrous metal contained nickel, tungsten, manganese or other alloys, which made it many times more valuable than the more ordinary commercial products.

The following table shows the quantity and value of secondary metals recovered in 1916 as compared with 1915:

Kind of Metals	1915		1916	
	Net Tons	Value	Net Tons	Value
Secondary copper, including that in alloys other than brass	99,937	$33,498,882	140,000	$68,880,000
Remelted brass	137,500	40,788,000	300,000	127,440,000
Secondary lead	36,400	7,416,600	56,700	13,289,400
Recovered lead in alloys	42,500		39,600	
Secondary spelter	52,900	14,433,800	50,700	14,284,400
Recovered zinc in alloys other than brass	5,300		2,800	
Secondary tin	5,250	10,554,180	7,600	15,131,040
Recovered tin in alloys	8,400		9,800	
Secondary antimony	2	1,811,568	80	2,270,016
Recovered antimony in alloys	3,100		4,400	
Secondary aluminum	5,700	5,802,100	12,900	23,430,200
Recovered aluminum in alloys	2,800		6,400	
Secondary nickel*	.....	.....	16	652,800
Recovered nickel in alloys*	.....	.....	800	
	.....	$114,304,930	.....	$265,377,856

*Recoveries made by International Nickel Co. from scrap nickel or alloys and from nickel in scrap ferrous alloys from any source are not included.

It is impracticable and unnecessary to segregate the statistics relating to the melting, refining and using of secondary metals according to States, but more than 90 per cent of the refining and smelting of drosses and scrap metals in the United States is confined to the territory east of St. Louis and north of the Ohio River. About 43 per cent of the secondary aluminum was reported from Ohio and Michigan, 27 per cent from Illinois and Wisconsin and 18 per cent from New York, New Jersey and Massachusetts. Smelters and refineries in St. Louis and Chicago recovered about 37 per cent of the antimony in alloys, and those in New York and Philadelphia about 45 per cent. The largest recoveries from tin dross, tin scruff and clean tin scrap were made in Pennsylvania, New York and New Jersey. Nearly all the secondary nickel was reported from Connecticut.

The Recovery of Tin

Owing to the scarcity of tin and the unprecedented demand therefor in the past 18 months, the feature of the Survey's report dealing with the subject of secondary tin is of special interest. Although the United States consumes nearly 50 per cent of the world's production of tin, apparently there were no domestic tin ores smelted in the United States in 1916, though some tin concentrates, containing about 140 tons of metallic tin, were shipped from Nome, Alaska, to Singapore, Federated Malay States, for treatment. A new tin smelter, having a capacity of 18,000 tons a year, was put in operation in March, 1916, by the American Smelting & Refining Co., in New Jersey, and tin concentrates from Bolivia were imported and smelted. Another tin smelter is to be built on Long Island by the Williams-Harvey Corporation, which will also use Bolivian ores.

The secondary tin recovered in 1916 was equal to about 24 per cent of the tin imported, as metal or as oxide, into the United States during the year (69,055 net tons). Secondary tin recoveries increased from 13,650 tons in 1915 to 17,400 tons in 1916. The quantity recovered as tin was 7600 tons and that in alloys and chemical compounds 9800 tons.

The recovered tin in alloys includes the tin content of products made in several plants from clean tin-plate scrap and a small quantity of old tin cans. The largest recoveries of tin were made from the scruff and drosses that occur in making tin plate and terne plate, and amounted to more than 4850 tons. About 2600 tons of tin was recovered from clean scrap tin plate. Apparently only about 750 tons was recovered from scrap tin (not tin plate) clippings, old tin pipe and tin foil. Only one plant reported using solely old tin containers, from which the tin coating and solder were first sweated and the black plate was then remelted to make sash weights. An increased quantity of tin was recovered in bronze, and a considerable part of the brass remelted contains a small quantity of tin and of lead. Other alloys from which secondary tin was recovered were solder, babbitt, pewter, terne metal and electrotype metal.

W. L. C.

Cement for High Temperature Furnaces

The place in industry which has been won by a high-temperature furnace cement as a special commodity was discussed on the evening of Nov. 1 before the Brooklyn Engineers' Club, Brooklyn, N. Y., by W. S. Quigley, president Quigley Furnace Specialties Co., Inc., New York. By means of lantern slides and demonstrations with electric furnaces he showed the quality of bricks made from both neat cement and a mixture with ground firebrick which he calls Hytempite. He also exhibited the strength of joints made with the cement. It was brought out that a considerable use had been made of the cement for repairing cracked crucibles and for building hearths of furnaces and for patching furnaces while hot. Sometimes the hearth bricks are made of a mixture of cement and carborundum fire sand, such giving a product which resists the abrasion to which the bottom of a heat-treating furnace for example, is subjected. In repairing hot furnaces, the material is put into place in the form of a paste and rammed or tamped. Slabs large enough to form furnace covers, say 2 x 3 ft. and 5 in. thick, have been made; in such cases the composition slab may be handled in two days, this period sufficing for a surface set, and it is then baked for three or four hours at 1200 to 1400 deg. Fahr. Such slabs were made for drop forging heating furnaces for the Dodge automobile plant at Detroit.

The experiments with the electric furnace included tests to show that the products have a low co-efficient of expansion and that the fracture showed no sponginess or swelling. Instances were mentioned of Schwartz furnaces being given four or five months longer life by the use of the cement introduced on a paddle and pressed into the cracks.

The Parker Supply Co., 785 East 135th Street, New York, maker of sheet metal screws, expansion bolts, sash chain and damper quadrants, has been reorganized and "is now backed up by a $3,000,000 international concern." H. Rosenberg remains as the company's president and sufficient machinery has been installed, it is stated, to double capacity.

The United Steel Co., Seattle, Wash., incorporated for $150,000 by George T. Richards and John Johnson, proposes the establishment of an open hearth steel plant in the Rainier Valley district. The Industrial Bureau of the Seattle Chamber of Commerce is investigating the proposition.

Carbon Steel Company Annual Report

The Carbon Steel Co., Pittsburgh, has issued its annual report for the fiscal year ended Sept. 30, 1917. The development of the business of the company and the improvements in its financial condition during the past five years are shown in a comparative statement as follows:

	End of Fiscal Year Sept. 30, 1912	End of Fiscal Year Sept. 30, 1917	Increase
ASSETS			
Total investment in real estate, plant and equipment	$5,766,766.07	$6,434,629.85	$667,863.78
Accounts and bills receivable	315,100.52	1,070,492.08	755,391.56
Inventories	354,674.71	1,385,142.74	1,030,468.03
Cash	25,249.77	1,231,142.89	1,205,893.12
LIABILITIES			Decrease
Capital stock	$5,000,000.00	$5,000,000.00	None
Bonds and mortgages	719,000.00	464,000.00	$255,000.00
Bills and accounts payable	$91,291.06	697,284.67	194,006.39
Surplus	69,792.54 (Deficit)	2,979,563.47	3,049,356.01 (Increase)
MISCELLANEOUS			Increase
Gross sales	$1,523,912.54	$9,620,913.49	$8,097,000.95
Net profits from operation	28,443.22	2,234,545.20	2,206,101.98
Dividends paid	None	430,000.00	430,000.00
Total pay roll	348,423.10	1,813,235.42	1,464,812.32
Average number of employees	707	1,650	943
Estimated value and tonnage of orders and contracts on hand	$255,000.00 6,981 net tons	$8,258,000.00 62,432 net tons	$8,003,000.00 55,451 net tons
Total shipments	41,664 net tons	93,479 net tons	51,815 net tons

Charles McKnight, in his report to the stockholders, said:

In May last the president of your company was offered a controlling interest in the Kittanning Iron & Steel Mfg. Co., a corporation which owns a blast furnace and valuable coal lands at Kittanning, Pa., and your directors authorize the purchase of 51 per cent of the capital stock of the Kittanning company at the option price, namely, $131.25 a share. It is confidently believed that the controlling interest of this property will prove a very valuable asset to your company, not only on account of the assured source of supply of pig iron, but also by reason of the coal acreage, which is now being rapidly developed, and from which it is expected that your company will receive its full supply of coal after Dec. 15, 1917.

During the year, all of the first and second mortgage bonds of the Carbon Iron Co., aggregating $700,000, which matured April 1 last, have been paid and cancelled. There has also been redeemed and cancelled $18,000 par value of the 6 per cent sinking fund gold bonds of the company to comply with the sinking fund provision, so that only $324,000 of this issue are now outstanding. Of the total amount of these bonds authorized, namely, $2,000,000, $206,000 have been redeemed and cancelled, leaving $1,470,000, unissued, in the company's treasury.

Two Lake Superior Mines Change Hands

Two important mines in the Lake Superior district have been acquired by independent consuming interests during the past few days. The mines involved in the transactions are the Scranton on the Mesaba range, and the Plymouth on the Gogebic range. The Scranton mine up to 1917 had shipped 521,841 tons of ore. The Plymouth is a large open pit property which shipped 330,427 tons of ore in 1916, its first year. The lease of the Scranton mine has been owned by the Lackawanna Steel Co., with Pickands, Mather & Co. handling its operation and sales. A new company known as the Hoyt Mining Co. has taken over the lease. The Plymouth mine will be taken over Jan. 1 by the recently organized Plymouth Mining Co. and Pickands, Mather & Co. will operate the mine and sell the ore. Interested in both mines are the Lackawanna Steel Co., Pickands, Mather & Co., Youngstown Sheet & Tube Co., Midvale Steel & Ordnance Co., and the Steel Co. of Canada, Ltd. In addition to these, the Bethlehem Steel Co. and the Wisconsin Steel Co. are interested in the Scranton mine and the Allan Wood Iron & Steel Co. in the Plymouth mine.

The Greene-Wolf Co., 30 Church Street, New York, has been organized to operate in iron and steel products, wrought iron and steel pipe, etc. D. Greene and G. W. Wolf, formerly connected with the Eagle Pipe Supply Co., head the company.

Special Type of Filing Machine

The Newark Engineering & Refrigerating Co., 476 Eighteenth Avenue, Newark, N. J., has developed a special type of filing machine. One of the features is the use of a square shaft supported by two large babbitt bearings, while a large working platen which may be set at an angle enables the machine to handle a great variety of work coming within its scope.

The machine is driven by belt and the belt shifting mechanism is mounted at the lower end of the column on one side where it can be readily reached. From the driving shaft in the base of the column the power is transmitted through a disk and crank to the square shaft in which the file is mounted. The bearings of the shaft are located in the base and the table support which is calculated to eliminate side motion and do away with the tendency to undercut the work when finishing pieces to a line. The platen, which has a diameter of 8 in., can be set at an angle by adjusting screws and locked in position. The height of the platen from the bench is 10 in.

The Use of a Square Supporting Shaft with Long Bearings Is Relied Upon to Eliminate Side Motion in a New Filing Machine and the Resultant Undercutting

The Haynes Stellite Co., Kokomo, Ind., has established a service department to which manufacturers may return stellite scrap and receive credit on new shipments at the rate of $4 per pound. The offer is to include bar stock and special castings only, and not arc-welded tools. In addition to accommodating stellite users, another purpose is to discourage the practice of some concerns in buying up scrap stock and recasting it. The company states that stellite is recognized as a metal unsuited to amateur tinkering, and it naturally does not wish its product subjected to the possible bungling of inexpert hands. The company reports a steadily increasing business, with exceptionally strong foreign demand.

Revision of Revenue Act Is Proposed

Important Changes Probably Will Be Made at Next Session of Congress—Outlook Is That Radical Differences of Opinion Will Develop

WASHINGTON, Nov. 6.—Although the war revenue act of Oct. 3, 1917, has been on the statute books but a month, a comprehensive measure revising many of its most important features and increasing its revenue-producing capacity approximately 100 per cent is already in course of preparation under the direction of the Treasury Department and will probably be presented to Congress early in the session which convenes on Dec. 3. While this announcement will be far from welcome news to the business community, it should not occasion great surprise, for throughout the debates on the war revenue act in the House and Senate during the recent session the leaders of both parties gave repeated warnings that some revenue would have to be provided by the Sixty-fifth Congress; in fact, the statement was many times made that the income tax, the war excess profits tax, and other levies included in the bill were so framed as to permit of material increase in their productive capacity by the simple expedient of raising rates without modifying the basic and administrative provisions.

The proposition to put through a measure authorizing additional taxation to the amount of $2,500,000,000 at the coming session is based upon a rough estimate that Congress, during the coming winter, will authorize expenditures for the fiscal year beginning July 1 next closely approximating $30,000,000,000, including about $8,000,000,000 in loans to the Allies. This huge sum, which fairly staggers the imagination, represents an increase of about $10,000,000,000, or 50 per cent, over the appropriations and authorizations made at the recent session to cover the activities of the United States, including all ordinary as well as military expenditures during the first year of our participation in the war. Conservative Congressional leaders are yet to be convinced that expenditures during the next fiscal year much in excess of those authorized for the current year can be justified, and administration officials will be obliged to demonstrate by detailed estimates backed up by sound arguments that such a huge sum as that suggested can be judiciously spent by this Government during a single fiscal year.

Some Important Facts

In this connection, two salient facts are emphasized: first, the disappointingly slow progress made in various branches of military activity, and, second, the provision made by Congress at the last session for a vast amount of preliminary work, including the construction of shipyards, ordnance plants, airplane factories, cantonments, etc., which will not require to be duplicated in the budgets for the new fiscal year beginning next July. The Shipping Board, for example, will probably not be able to spend during the current year more than half the vast sums, aggregating nearly $2,000,000,000, appropriated at the last session. Only a very small part of the appropriation of $664,000,000 to provide facilities for the manufacture of airplanes and for the production of planes and engines has thus far been expended, and much less than half the total can be advantageously disbursed before next July. Similarly with respect to the $350,000,000 appropriation for additional torpedo boat destroyers, a large part will be still in the Treasury at the end of the current year. In a general way it can be said that with respect to a very large part of the money granted by Congress for war purposes at the last session the administration has found it a much easier task to secure the funds than to spend them judiciously, and the balance on hand on June 30 next, although largely mortgaged by commitments, will, it is contended, constitute a very substantial proportion of the amounts which have been appropriated heretofore.

Need of More Money

Administration officials insist, however, that additional taxation calculated to produce not less than two and a half billion dollars must be authorized during the coming winter, and in support of this proposition contend that the figure is a conservative one. It is pointed out that of the $20,000,000,000 authorized for the support of the Government, the prosecution of the war and loans to the Allies during the current year, taxation will provide $4,000,000,000, or about 35 per cent of the total disbursements, exclusive of the $7,000,000,000, which, presumably, will cover the loans to the Allies. On the basis of expenditures of $30,000,000,000 during the next fiscal year, it is calculated that the Allies will receive loans aggregating about $8,000,000,000, leaving $22,000,000,000 for ordinary and military expenditures. Thirty-five per cent of this sum would be $7,700,000,000, or $1,200,000,000 more than would be secured from taxation should Congress increase the revenue-producing capacity of existing laws by $2,500,000,000 as proposed.

It is interesting to note in this connection that Great Britain, which is paying a larger proportion of the current cost of the war by taxation, is securing less than 25 per cent through that method and is obtaining the remainder by the sale of bonds. In France, taxation produces about 18 per cent of current expenditures, and in Germany only about 12 per cent. It is, therefore, apparent that the United States is financing the war on a far more conservative basis with respect to the accumulation of national indebtedness than any other important participant.

Proposed Methods

Much interest naturally attaches to the methods to be followed in securing additional revenue, should the administration's views prevail. As might have been expected, the war excess profits tax is counted upon for a further large sum, the projected increase being no less than $1,000,000,000. An increase in the corporate and individual income taxes is also under consideration, but it is believed that the Treasury Department's recommendation as to these levies will be confined to higher surtaxes on large private incomes, and that there may be no increase either in the corporate income tax, which is now 6 per cent on net earnings, nor in the normal tax of 4 per cent levied on individual incomes.

Two important revenue producing devices, considered during the recent session of Congress but abandoned, are again in contemplation, namely, a series of consumption taxes on such articles as sugar, tea, coffee, cocoa, etc., which was inserted in the war revenue bill by the Senate Finance Committee but subsequently withdrawn, and a horizontal increase in the tariff proposed by the Ways and Means Committee and adopted by the House but rejected by the Senate and the Conference Committee. The consumption taxes framed by the Finance Committee were calculated to produce about $100,000,000 and were withdrawn only because the committee decided to raise the excess profits tax to such an extent as to make the consumption taxes unnecessary. There is a strong element in both houses that will oppose these taxes, and the proposed levy on sugar will be antagonized by influential members of both the Ways and Means and Finance committees, but the most experienced observers here believe that sooner or later in the financing of the war imposts will be placed on the articles mentioned.

Proposed Increase of Tariff

The revival of the proposition to make a horizontal increase in the dutiable schedules of the Underwood-

Simmons tariff act and to place a corresponding duty on all articles now on the free list will probably arouse the same vigorous protest that followed the presentation of this plan in the House last summer. The recommendation of the Ways and Means Committee to secure $200,000,000 by this means was adopted by the House as a matter of form and with little hope that the provision would remain in the bill as finally enacted, for the Senate leaders had already expressed their opposition to this method of revising the tariff. When the bill reached the Finance Committee Chairman Taussig of the recently appointed Tariff Commission was called into conference, and after he and his colleagues had examined the House provision with care they unhesitatingly recommended its rejection.

The reasons presented in support of this recommendation are as good to-day as when they were laid before the Finance Committee. A horizontal increase in the tariff was opposed as certain to result in adding materially to the cost of many necessaries, while incidentally affording an unjustifiable increase in the protection enjoyed by certain domestic industries. The imposition of duties on articles which have been carried on the free list for many years was also strongly disapproved by the commission, and it was urged that if this were done it would deal a heavy blow to manufacturers in many important lines. It was also contended that a horizontal increase granting to finished products only the same additional rate of duty as was assessed on the raw materials thereof was unscientific and might work great injury. Finally, the broad contention was made that the tariff ought not to be revised until the commission had had an opportunity to make a careful investigation of the industries of the United States and of the leading manufacturing countries of the world, and that no such satisfactory inquiry could be made during the present abnormal times.

Would Revise More Sections

A feature of the revenue measure now under consideration that will prove of great interest to the business men of the country will provide for the repeal or revision of certain provisions of the act of Oct. 3, 1917. That Congress blundered seriously in the drafting of several important provisions of the revenue act is now frankly admitted by Congressional leaders as well as administration officials. The war excess profits tax is probably the most conspicuous illustration of hastily contrived and badly botched legislation to be found in the entire measure. So difficult have the Treasury officials found it to construe this feature of the law that the Secretary of the Treasury has decided to appoint a commission to assist the Internal Revenue Bureau in its interpretation, and it is now stated that this commission will also prepare a series of recommendations for comprehensive amendments designed to clarify the terms of this section. It is quite possible that Congress may decide to completely recast Title II of the act, which includes the war excess profits tax provision, especially in view of the desirability of establishing a basis for securing further revenue from this source by the simple expedient of raising the graduated scale of rates.

Declared a Misnomer

The chief criticism of the war excess profits tax is that it is a misnomer in that the revenue to be produced therefrom does not necessarily represent profits due in any way to the war. The Finance Committee at one stage in the consideration of the bill proposed the English plan of assessing this tax under which profits in excess of the average gains of the pre-war period, including the years 1911, 1912 and 1913, would be subjected to levy, but this was thrown out, and under the provision as incorporated in the law all profits in excess of 9 per cent of the actual capital invested and under certain conditions in excess of 7 per cent are taxed in accordance with a graduated scale. The adoption of an ambiguous, arbitrary, illogical and altogether unjust definition of "capital" has subjected this feature of the law as enacted to much well-merited criticism, which will no doubt prove influential in hastening revision. Numerous instances have been cited of corporations, conservatively capitalized, which, though earning during the current year much less than they did during the pre-war period, will be called upon to pay into the Treasury a very large part of their gains. The fact that the law allows no credit in capital account for good will, unless purchased for cash or tangible property, will work a great hardship in many cases where brands and trade-marks, the value of which has been created by heavy expenditures extending over a long period of years, constitute the chief assets of the corporation in question.

Tax on Professions

Another provision of the excess profits tax that has been sharply assailed and that may be revised, if not repealed, is that which includes "professions and occupations" within the scope of this feature of the law, imposing a tax of 8 per cent on the salaries and earnings of all individuals in excess of $6,000, notwithstanding the fact that such individuals pay the income tax and the accompanying surtaxes levied by another provision of the act. The sales manager of a corporation, for example, who is in receipt of a salary of $15,000 per annum will be called upon to pay not only the income tax and surtaxes prescribed by Title I of the revenue act, but $720 as a "war excess profits tax," and this, too, in spite of the fact that he may be drawing a smaller salary than during the pre-war period. An individual enjoying an income of $15,000 from stocks and bonds inherited by him would entirely escape the war excess profits tax, although he is engaged in no useful occupation whatever and during the pre-war period was entirely without income.

The Postal Rates

There is every reason to believe there will be a comprehensive revision of those sections of the war revenue act making changes in the postal rates. The increase in the postage on letters from two to three cents per ounce is regarded in many quarters as a serious blunder. The freest possible use of the mails is essential to the development of the country and the prosperity of manufacturers, merchants and consumers. Penalizing the use of the mails is certainly an experiment of doubtful wisdom and precedents are all against its success. In Canada, where a wartax of one cent on each letter or post card, regardless of weight, was adopted in 1914, the receipts have been very disappointing and for a long period showed an actual deficit. Experienced postal statisticians have already gathered figures designed to demonstrate that the Government will secure but a small net increase in revenue from the change, while it will be argued that this negligible gain will be at the expense of the prosperity of the entire country.

The drastic provisions of the war revenue act imposing greatly increased postal rates on business papers, magazines, etc., on a zone basis will undoubtedly be revised at the coming session. The law is so arbitrary and unjust to publishers and subscribers that no attempt has been made to defend it, but, on the contrary, Congressional leaders have frankly stated that it will probably be amended before it takes effect on July 1 next.

W. L. C.

Announcement was made by the Erie Forge Co., Erie, Pa., that the plant additions which have been started by that company will include an open-hearth plant with two open-hearth furnaces with a yearly capacity of 35,000 tons, forge shop and machine shops. It is stated that the plant will be a separate unit to be devoted exclusively to Government work and that it will be operated under the name of the Erie Forge & Steel Co. The Erie Forge Co. at present has two open-hearth furnaces. A 250-acre site was recently acquired, 40 acres of which will be used as a site for the new plant. A contract for four buildings in connection with the new plant has been awarded to the James R. Gloyd Co., contractor, Cleveland.

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Eliminating the Unessentials

The elimination by the Government of industrial activities unessential for prosecuting the war is proceeding rapidly. The effect upon industry in general will probably be much greater than has been assumed. The interdependence of industries is so great that each stoppage of a specific activity is likely to produce extensive ramifications.

A typical case, and quite an illuminating one, is the open top car order of Judge Lovett, administrative officer under the priority of shipments act. This order was dated Oct. 27, becoming effective Nov. 1, and covers open top cars, other than flat and work cars and cars used for carrying coal, for carrying materials and supplies for building, maintaining or repairing roads, sidewalks or places of amusement, manufacturing passenger vehicles, furniture or musical instruments, or transporting passenger vehicles, furniture or musical instruments. The railroads are prohibited from furnishing empty cars for such purposes and from moving them if loaded. The object is to increase the supply of cars for carrying coal, coke, ore, limestone and other materials involved in the metal, sugar and fertilizer industries.

At first glance the order may not seem so very formidable since road building is not a particularly active industry in winter, and manufacturers of passenger vehicles, furniture and musical instruments probably receive the major portion of their raw materials in box cars rather than open tops. It is quite improbable, however, that box cars can be found in sufficient numbers to replace the open top cars thus taken out of the service covered by the order, and it is quite clear that if an industry is deprived of one of its raw materials it cannot consume the others. It is necessary to assemble all the raw materials, not merely the major portion of them. No period is assigned for the duration of the order; it is to hold until withdrawn. Made in a season of good weather it is quite unlikely to be withdrawn in a season of bad weather.

The railroads are not getting into better physical condition, but rather their rolling stock and roadways are deteriorating under the pressure of a record traffic movement with material and labor for upkeep scarce and very high priced. In addition the inclement weather that always ties up railroad operations more or less is rapidly approaching. Thus there is prospect that additional orders of this description will be issued from time to time. Washington advices have been that the Government contemplates various restrictions upon industrial activity involved in the unessentials and may resort to additional means, other than through the railroads, for restricting the unessential activities.

To this slowing down in specific activities marked as being unessential there will necessarily be intricate ramifications. All industry will be slowed down more or less. If road building is curtailed the manufacture of road building machinery will likewise be curtailed. If the manufacture of furniture is curtailed there will be curtailment in industries related to the furniture industry, and so all along the line.

There will not likely be much complaint, even on the part of those most interested in these forced curtailments in industrial activity, but it is the part of wisdom for all to look forward and adjust their own affairs accordingly.

One unfortunate feature in connection with the elimination of the unessentials in industrial activity is that it comes after the general principles of the selective draft have become established. It would have helped greatly if it had been possible to know, when the selective draft was first applied, how the Government was going to classify industries as to essential and non-essential. Even in industries, and departments of industries, that were recognized as being directlly associated with war activity, it was very difficult to secure exemptions for skilled workers and for even foremen and superintendents, whereas with so many industries to be slowed down the men thus drawn could have been replaced by others who would not be missed industrially. While we were warned repeatedly not to duplicate the mistakes made in England and France in calling men to the colors, we shall probably find that we have made mistakes a-plenty, and a wholesale return of drafted men having skill in the essential industries, to be replaced by others, may be a development of the next few months.

The Business Situation

While Wall Street has had the reputation of being able to discount the future of business, the declines in share values of the past fortnight or so are open to the criticism, with respect to their being a possible index to the future of business, that they have been too uniform in the different classes of securities. It is quite certain that the curtailment in industrial activity that may occur in certain directions will not extend in all directions. The railroads, for example, are promised the maximum amount of business they will be able to handle, and as to earnings upon the business done, the declines in railroad share values followed the announcement that the Interstate Commerce Commission had reopened the 15 per cent rate advance case.

As to the steel shares, they are undoubtedly worth much more than when they last sold at the prices now ruling. As the steel shares rose last year, the rise was legitimately to be ascribed not so much to the establishment of new rates of earnings, but to increases in assets due to earnings actually realized or in near prospect. Each month added to the assets. In the interim of more than a year during which the shares commanded higher prices than those ruling this week the steel companies have added largely to their assets.

The entrance of the United States into the war was under an unprecedented condition as to the business situation. The effect of a declaration of war has always been to unsettle business. When a country engages in war, there is a decline or a panic in the share market and exchanges are frequently closed. Industries tend to halt. Later they may revive and become very active, but the first effect of war is depressing. All these conditions were reversed in the case of this country's entering the war. At the time gratification was expressed. It appeared that the country had avoided the usual *sequelae* of a declaration of war. Industry and finance had ridden safely over what had in all other cases proved dangerous ground. Instead of there being merely contentment that a danger had been passed, new flights were essayed, and perhaps that is the cause of the present change in affairs.

Government price fixing cannot be blamed for decreases in industrial activity. The high flight of prices tended to restrict consumption. If purchases are not made freely at set prices, it cannot be argued that there would have been more buying if prices had been allowed to remain at higher levels. Eventually market conditions would have forced various price readjustments, and the chief question is when the readjustments would have occurred. If delayed, the readjustment might have proved more injurious. Holders of material always experience losses when market values decline, and if the prospect of Government price regulation held over the situation for months preceding the actual inception of price fixing had the effect of causing holders to reduce their stocks the situation to-day is in that respect better than would otherwise have been the case.

It is quite possible that the present unsettlement is the one that was due the country, according to precedents, when it entered the war. If so, we have been very slow, instead of quick as Americans usually think they are, while it is also to be observed that in that event we may later feel the quickening effect of war upon industry that is usually felt in a country following the disturbance caused in the first place.

The Steel Corporation's Profits

The Steel Corporation's earnings as reported quarterly this year have shown a progressive and rather large diminution when the actual profits have decreased little if at all. The divergence is due to the fact that there was no opportunity, in the case of the first quarter, to make any allowance for the war tax. For the second quarter an allowance was made, in accordance with the provisions of the House bill, while for the third quarter an allowance was made in accordance with the law as enacted. The amounts of these allowances have been stated, and the earnings plus tax allowance for second and third quarters compare as follows with the profits reported for the first quarter, without tax allowance. First quarter, $113,121,018; second quarter, $144,498,076; third quarter, $131,976,797.

There was a large increase in earnings from the first to the second quarter. The apparent decrease from the second to the third quarter may be considerably offset by the fact that before reporting third quarter earnings there was deducted an allowance toward amortizing the extra cost of construction undertaken for the purpose of furnishing war material. If after making all allowances necessary to bring the figures for the quarters strictly comparable a decrease in earnings were still shown, it would be ascribable to decrease in shipments rather than to decrease in prices realized. There is no doubt that on the whole there was a substantial increase in the average prices realized per ton shipped.

The Corporation's allowances for the war tax total $164,233,609 for the three quarters, made up of $33,865,000 for the first quarter and $53,918,872 for the second quarter, mentioned in the second quarter report and computed against the House bill, and an addition of $12,716,724 mentioned in the third quarter report, by recomputing the tax for the half year according to the terms of the law, meanwhile enacted, plus $63,733,013 for the third quarter.

While the Corporation's allowance for the war tax is only tentative, the interpretation of the law being still the subject of considerable doubt, it is of interest to observe that according to the reports the total profits subject to the tax are $389,395,891 for the three quarters, the allowance for the tax being thus 42 per cent on an average. In the case of the third quarter alone the allowance is about 48 per cent.

Numerous manufacturers engaged on work for the Government would like to build additions to their plants but are hesitating about doing so because they will be compelled to pay taxes on earnings expended for new construction and in future years will be allowed to charge off only the ordinary

amount for depreciation. Building to meet extraordinary demands of war is regarded as hazardous for the reason that much of the new capacity is likely not to be in demand when peace is restored. Manufacturers believe that more liberal provision should be made in the form of protection against post-bellum laws and the subject is worthy the careful attention of Congress at its next session in December.

Co-operation in the Manganese Problem

Had the fortunes of war placed Brazil on the side of the Central powers, the steel industry in the United States would have faced a serious peril. With all other sources of manganese ore cut off since the war started, Brazil has been the industry's mainstay, except for the very small supply furnished by our own and a few nearby foreign mines. For several months the country's supply of ferromanganese has not exceeded an amount necessary to run the steel industry more than three months, and there seems no prospect of overcoming this handicap.

The United States Bureau of Mines has undertaken a most important, practical research, as outlined on another page in this issue. The object is to determine to what extent the use of other manganese bearing materials and the conserving of manganese in certain stages of steel-making processes may be resorted to. Concentration of our manganiferous iron ores, of which the supply is large, is one phase. The use of substitutes and of alloys containing less than 80 per cent manganese, as well as the judicious employment of high manganese pig irons are measures giving some promise. The production of certain manganese-iron alloys in the electric furnace and the electric reduction of high manganese slags are also interesting lines of research, full of possibilities.

The results obtained should be an appreciable reduction of the menace of a great industry dependent totally on foreign sources for an indispensable material. To attain this, however, active co-operation with the Bureau of Mines on the part of steel companies, pig-iron makers and metallurgists is vital. The rewards will be commensurate with the earnestness of the effort put forth. Hearty co-operation is a patriotic duty as well.

CORRESPONDENCE

Repairing German Ships by Electric Welds

To the Editor:—Following is a resumé of a talk given by David H. Wilson before the New York Railroad Club recently on the arc welding process used in repairing the German interned ships. The talk was received with such profound attention, interest and even enthusiasm that I offer it for the benefit of your readers. MYRON F. HILL.

New York.

When the United States took over the German boats it was first found that the Germans had broken large pieces of metal out of many of the cylinders, valves, circulating pumps, condenser casings, etc., and thrown them overboard. The first boat on which electric welding was permitted had two cylinders broken and the estimate on the work was $32,000, with 10 to 12 months to complete it. We began on these cylinders in an open field with nothing but a tarpaulin for protection from the elements. In 52 hr., without any preheating or annealing of the cylinders, the job was completed. The cost was in the neighborhood of $2,600, nearly $800 being for lighterage. When the cylinders were reported finished the Government officials came down to the dry dock and gave the cylinders a hydrostatic test. Ordinarily, cylinders of that character are subjected to a test of 20 per cent over their working pressure. These cylinders were given a test of 50 per cent over their working pressure and there was not the slightest defect in the welding.

Then for 48 hr. a contraction and expansion test was applied and the welding held. A service test was next decided upon, consisting of first lashing the vessel to the dock and turning over the engines, followed by a 48 hr. run at sea. The officers appearing fully satisfied, the ship two days later was loaded and sailed for Europe and has since made at least two round trips without the welds developing any defects. It is now the general opinion that the welding will outlast the engine. We are now finishing two of the largest and most damaged German ships.

Investigation has shown that the reason for non-uniform results with electric welding is the fluctuating temperature used. The blacksmith in our shops who has the best eye for colors has the most uniform welds. A machine was then developed that would control the heat by controlling the current, which is uniform across the arc.

Using the best material at hand in our investigation we found that about 40,000 lb. was the best tensile strength we could get even with a controlled heat, and as it was useless to use such material on boiler plate that was good for 50,000 to 60,000 lb. tensile strength, we next took up the subject of developing suitable metals, i.e., metals having the same characteristics as the metal to be welded. It was found throughout the list of alloys treated that a temperature different from the critical temperature showed uniformly bad results. For instance, a piece of manganese steel having a critical temperature gaged by 100 amperes at 35 volts would give from 55,000 to 65,000 lb. tensile strength and from 12 per cent to 18 per cent elongation; by dropping the number of amperes from 100 to about 85 the tensile strength would drop off very materially, and upon analyzing the weld it showed that the heat was insufficient, since the weld was full of voids and the metal was deposited in globules. Using the same operators, under the same conditions, and raising the current 15 or 20 amperes above the critical 100 amperes, it was found again that the weld would drop off in tensile strength and would show less elongation. The tests are mentioned to show that it is of vital importance that the metal should be flowed at the critical temperature and that this must be maintained to give uniformity.

When the operator is using too high a temperature the metal will sputter and not flow, and when too low a temperature is used the arc will keep snapping and the metal fail to fuse. At the critical point the metal will flow in a plastic continuous stream, and it is this latter condition that the operator for his own protection seeks to maintain, since this makes welding the easiest.

In our experiments we began by using a machine which gave 70 volts. It was not long before it was found that the welds were not uniform, and upon examining the welds that fell below standard they were found to have craters formed in the welded metal. This was due to the high voltage and to the fact that craters occurred every time the arc was broken. Some electric welding experts contend that the voltage does not matter, as 18 to 22 volts is the established voltage across the arc regardless of the voltage of the line; but they neglect to say that when an operator breaks his arc, he has at that instant of breaking the maximum voltage of the line across the arc, which greatly increases the temperature. It is this which causes the craters. After long experimental work it was found

that 30 to 38 volts at the generator is preferable. At 30 volts practically no craters were formed at the break of the arc. At 38 volts on slicing the weld it was found that the crater did not penetrate down into the weld but left just a blister on the surface.

Some may ask the question, "How do you know that the steel went down into the cast iron?" Before welding a cylinder a piece of metal was tested and it was found that the steel was uniting with the cast iron, as proved by the fact that after such treatment the welded stratum may be machined like steel with a curling ribbon of steel coming from the tool.

The Freight Rates Advance Case

WASHINGTON, Nov. 6.—In the presentation of their case in support of a petition for a 15 per cent advance in freight rates, representatives of the Eastern railroads yesterday told the Interstate Commerce Commission that in spite of substantial gains in gross earnings, the net revenues of the roads throughout the East have decreased to such an extent that even should the full amount petitioned for be allowed it would not provide for necessary improvements and a fair return on invested capital. The witnesses for the roads, who numbered no less than seven presidents of large systems and numerous heads of legal departments, were accorded close attention by the commission and express great confidence that the advances asked for will be allowed. They were especially encouraged by the unprecedented action of the Comptroller of Currency, who yesterday issued a formal statement predicting that the commission would authorize the advances and declaring that the present railroad rates are not high enough to maintain the credit of the roads.

No Objections from Shippers

A significant feature of the hearing was the appearance of attorneys for certain shippers' associations which heretofore have consistently fought the railroads in every effort that has been made to secure advances. Clifford Thorne, representing live stock interests, grain dealers and oil companies of the Middle West, told the commission that while his clients were opposed to higher rates they were "entirely willing to abide by the result of the investigation." Ross D. Rynder, counsel for the Chicago packing houses, said that his clients would raise no objection to a percentage increase on all classes of merchandise if the commission should decide it to be necessary and would present no more complaints until after the war emergency has passed.

Increase in Passenger Rates Asked

While it was understood the hearing would be limited to the discussion of freight rates, a new factor in the controversy was injected by the railroads running into Boston, the representatives of which filed applications for authority to increase passenger rates. It is understood that other New England roads will take similar action. The proposed increases are one-quarter of a cent per mile on one way tickets and mileage books and an increase of 25 per cent in rates covering so-called trip tickets.

The commission announces that it expects to have all evidence in this case in by the end of next week. Thursday, Nov. 15, has been set for the cross-examination of such railroad witnesses as shippers may desire recalled and argument will be heard on Saturday, Nov. 17. In the meantime the following hearings will be held: Nov. 7, general commodities, together with Rutland and Lehigh and Hudson rates on live stock in trunk line territory; Nov. 9, petroleum and its products and grain and its products; Nov. 13, lumber and cement shippers interested in the 15 per cent case; Nov. 16, shippers' testimony.

The Graham iron furnace, Graham, Va., recently acquired by John B. Guernsey & Co., Roanoke, will make ferromanganese and spiegeleisen, using Brazilian ore.

Wellman-Seaver-Morgan Co., Cleveland, has established a branch office in Seattle, Wash., in charge of Glenville A. Collins.

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INCREASE IN PIG IRON

October Gain Is 2000 Tons a Day

A Net Increase of Ten in Furnaces in Blast

Pig iron production increased by an average of 2000 tons a day in October, the total for the month being 3,303,038 gross tons, or 106,550 tons a day, against 3,133,954 tons for the 30 days of September, or 104,465 tons a day. October ordinarily is a month in which blast furnace operators make an exceptional showing, but this year coke difficulties prevented any special spurt. A number of additions were made to the list of active furnaces, 355 being in blast Nov. 1, against 345 Oct. 1, a net gain of ten. The rated capacity of the furnaces active on Nov. 1 is 109,059 tons a day as against 107,250 tons a day on Oct. 1.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from October, 1916, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
October, 1916	81,639	31,550	113,189
November	80,141	30,253	101,394
December	74,264	28,273	102,537
January, 1917	72,394	29,249	101,643
February	65,280	29,193	94,473
March	73,731	31,132	104,863
April	79,031	32,134	111,165
May	77,561	32,677	110,238
June	76,805	32,197	109,002
July	76,440	31,380	107,820
August	71,436	33,336	104,772
September	73,290	31,175	104,465
October	76,664	29,886	106,550

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces in October and the three months preceding:

Monthly Pig-Iron Production—Gross Tons

	July (31 days)	Aug. (31 days)	Sept. (30 days)	Oct. (31 days)
New York	194,255	178,841	182,171	202,939
New Jersey	18,990	21,315	25,169	27,397
Lehigh Valley	116,432	111,583	110,418	117,523
Schuylkill Valley	94,578	91,236	75,727	80,478
Lower Susquehanna and Lebanon Valley	84,540	88,295	84,758	90,386
Pittsburgh district	664,456	664,141	638,611	666,731
Shenango Valley	174,614	164,709	140,205	161,615
Western Pennsylvania	215,192	213,731	211,513	218,314
Maryland, Virginia and Kentucky	89,603	83,233	90,466	100,446
Wheeling district	129,689	124,627	118,195	122,666
Mahoning Valley	322,165	300,740	309,570	316,906
Central and Northern Ohio	299,458	272,109	271,519	275,996
Hock. Val., Hang. Rk. & S. W. Ohio	55,186	59,577	62,499	64,061
Chicago district	503,946	503,723	457,330	455,045
Mich., Minn., Mo., Wis. Col. and Wash.	114,952	105,486	108,325	117,397
Alabama	231,738	232,355	222,687	260,469
Tennessee and Ga.	32,644	32,246	24,791	24,769
Total	3,342,438	3,247,947	3,133,954	3,303,038

Capacity in Blast Nov. 1 and Oct. 1

The following table shows the daily capacity in gross tons of furnaces in blast Nov. 1 and Oct. 1 by districts:

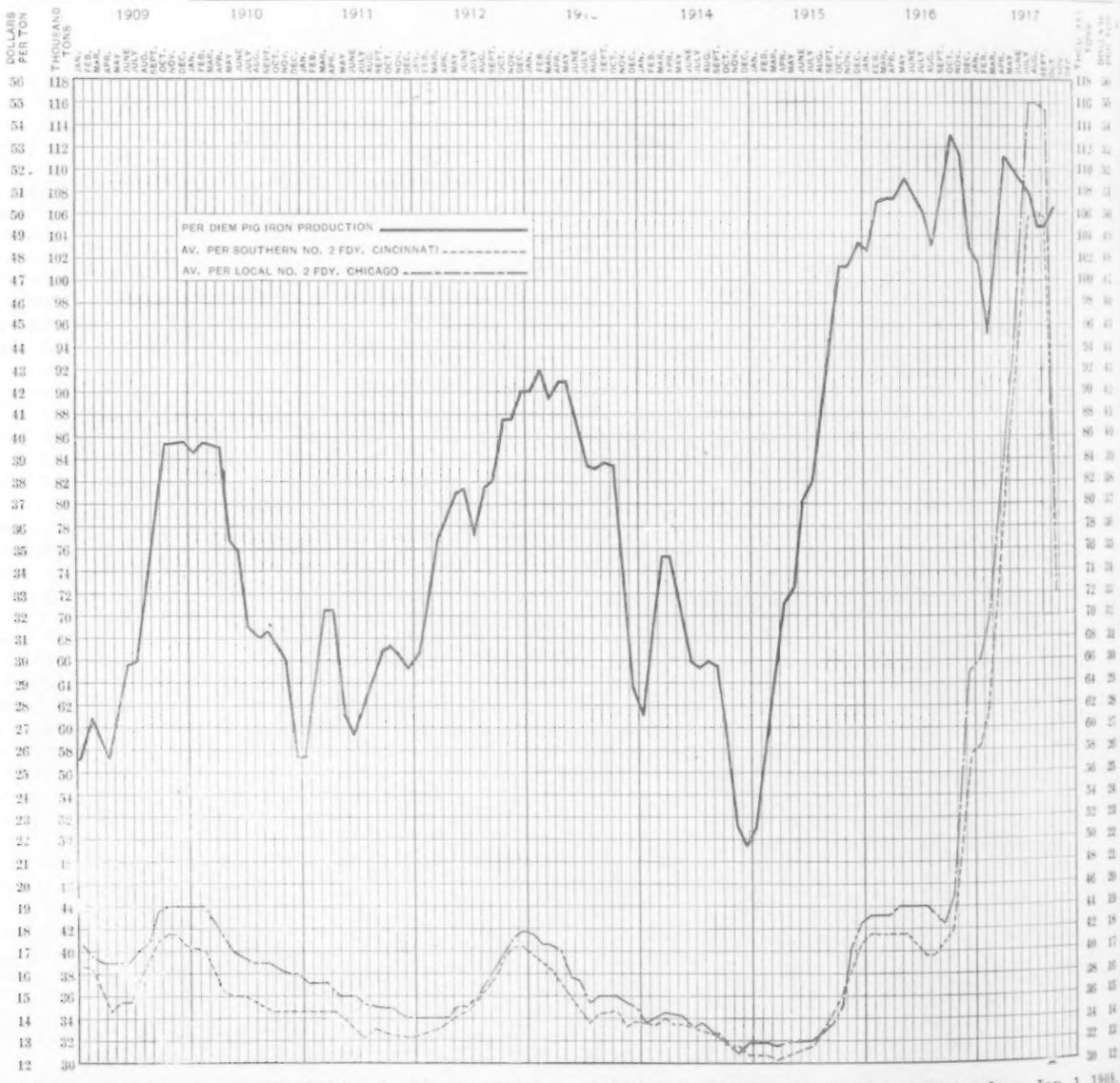


Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from Jan. 1, 1908, to Nov. 1, 1917; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace

Coke and Anthracite Furnaces in Blast

Location of furnaces	Total number of stacks	Nov. 1 Number in blast	Nov. 1 Capacity per day	Oct. 1 Number in blast	Oct. 1 Capacity per day
New York:					
Buffalo	18	18	6,014	18	5,926
Ferro	1	1	40	1	48
Other New York	4	3	545	2	354
New Jersey	4	4	846	4	863
Ferro	1	1	45	1	49
Pennsylvania:					
Lehigh Valley	21	14	3,546	14	3,729
Spiegel	2	2	245	2	241
Schuylkill Val.	13	9	2,610	8	2,360
Spiegel	1	1	90	1	88
Lower Susquehanna	8	6	1,695	6	1,697
Spiegel	2	2	89	2	84
Lebanon Valley	8	7	1,030	7	900
Ferro and Spiegel	3	2	95	2	97
Pittsburgh Dist.	53	48	21,656	47	20,553
Ferro and Spiegel	4	4	541	3	421
Shenango Valley	19	17	5,193	15	4,627
Western Pennsylvania	25	24	7,007	24	7,221
Ferro and Spiegel	3	2	60	1	80
Maryland	3	4	1,510	2	808
Ferro	1	..	..	1	101
Wheeling Dist.	14	12	4,038	12	4,273
Ohio:					
Mahoning Val.	26	24	10,152	25	10,619
Central and Northern	26	25	9,516	24	9,348
Hocking Val., Hang. Rk. and S. W. Ohio	17	15	2,066	15	1,976
Illinois and Ind.	36	33	15,125	32	15,869
Ferro	1	1	85	2	115
Michigan, Wis. & Minn.	12	10	2,619	10	2,727
Colorado, Mo., & Wash.	7	5	1,155	5	1,362
Ferro	1	1	190	1	142
The South:					
Virginia	18	13	1,585	13	1,579
Ferro	1	1	50	0	0
Kentucky	5	3	510	3	437
Alabama	37	32	8,227	32	7,661
Ferro	1	1	82	1	88
Tenn. and Ga.	16	10	802	9	807
Total	413	355	109,059	345	107,250

Among furnaces blown in last month were Burden at Troy, N. Y., Delaware River in the Schuylkill Valley, one Duquesne and one Edgar Thomson in the Pittsburgh district, one Claire and New Castle No. 1 in the Shenango Valley, Marshall in western Pennsylvania, Victoria in Virginia, one Maryland at Sparrows Point, one Ohio in the Mahoning Valley, one River in northern Ohio, one South Chicago in Illinois and Napier in Tennessee.

The list of furnaces blown out includes one Farrell in the Shenango Valley, Niles and Hannah in the Mahoning Valley and one Miami in the Chicago district.

Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of steel-making iron month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Pig, total production 1915	1916	1917	Spiegeleisen and ferromanganese 1915	1916	1917
Jan.	1,115,944	2,251,035	2,244,203	18,041	24,866	38,792
Feb.	1,237,380	2,183,845	1,829,846	13,319	23,877	32,137
Mar.	1,551,082	2,365,116	2,285,430	12,274	29,388	36,563
Apr.	1,584,111	2,316,768	2,370,937	12,337	31,862	39,595
May	1,694,290	2,408,890	2,404,380	13,440	35,844	37,701
June	1,770,657	2,295,784	2,304,155	19,200	38,597	30,829
July	1,949,750	2,306,303	2,369,630	17,854	31,353	43,884
Aug.	2,101,818	2,313,122	2,214,513	27,463	33,338	39,492
Sept.	2,129,322	2,309,710	2,198,705	23,159	29,451	42,235
Oct.	2,281,456	2,530,806	2,376,589	23,992	34,566	48,691
Nov.	2,198,459	2,404,210	.....	28,741	44,975	.....
Dec.	2,283,047	2,294,620	.....	25,004	43,470	.....

The Record of Production

Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1913—Gross Tons

	1913	1914	1915	1916	1917
Jan.	2,795,331	1,885,054	1,601,421	3,185,121	3,150,938
Feb.	2,586,337	1,888,670	1,674,771	3,087,212	2,645,247
Mar.	2,763,563	2,347,867	2,063,834	3,337,691	3,251,352
Apr.	2,752,761	2,269,655	2,116,494	3,227,768	3,334,960
May	2,822,217	2,092,686	2,263,470	3,361,073	3,417,340
June	2,628,565	1,917,783	2,380,827	3,211,588	3,270,055
July	2,560,646	1,957,645	2,563,420	3,224,513	3,342,438
Aug.	2,545,763	1,995,261	2,779,647	3,203,713	3,247,947
Sept.	2,505,927	1,882,577	2,852,561	3,202,366	3,133,954
Oct.	2,546,261	1,778,186	3,125,491	3,508,849	3,303,038
10 mo.	26,507,371	20,015,384	23,421,936	32,549,894	32,097,271
Nov.	2,233,123	1,518,316	3,037,308	3,311,811	.....
Dec.	1,983,607	1,515,752	3,203,322	3,178,651	.....
Total yr.	30,724,101	23,049,752	29,662,566	39,039,356	.....

The figures for daily average production, beginning January, 1910, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1910—Gross Tons

	1910	1911	1912	1913	1914	1915	1916	1917
Jan.	84,148	56,752	66,384	90,172	60,808	51,659	102,746	101,643
Feb.	85,616	64,090	72,442	92,369	67,453	59,813	106,456	94,473
Mar.	84,459	70,036	77,591	89,147	75,738	66,575	107,667	104,882
Apr.	82,792	68,836	79,181	91,759	75,665	70,550	107,592	111,165
May	77,102	61,079	81,051	91,039	67,506	73,015	108,422	110,238
June	75,516	59,585	81,358	87,619	63,916	79,361	107,053	109,002
July	69,305	57,841	77,738	82,601	63,150	82,691	104,017	107,820
Aug.	67,963	62,150	81,046	82,057	64,363	89,666	103,346	104,772
Sept.	68,476	65,903	82,128	83,531	62,753	95,085	106,745	104,465
Oct.	67,520	67,811	86,722	82,133	57,361	100,822	113,189	106,550
Nov.	63,659	66,648	87,697	74,453	50,611	101,244	110,394	.....
Dec.	57,349	65,912	89,766	63,987	48,896	103,333	102,537	.....

Diagram of Pig-Iron Production and Prices

The fluctuations in pig-iron production from January, 1909, to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production by months of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of THE IRON AGE.

A Government Statement on Labor Policy Wanted

A clear and definite official statement of labor policy on the part of the Government is urged in the New York *Sun* of Nov. 2 by Walter Drew, counsel to the National Erectors' Association. It would go far, he holds, to reduce labor troubles to a minimum. It would remove the misconception on the part of the union man as to the attitude of the Government and point clearly for him the path of patriotic duty. It would remove the incentive for the reckless calling of strikes for the closed shop in the mere hope that Government interference in assistance of such strikes would be forthcoming. It would check and discredit the unauthorized and misleading statements of agitators and of certain minor Government agents who come in contact with war work. Last, but not least, such a statement of policy would settle the doubts and hearten the resolution of a vast majority of loyal workmen who have remained out of labor organizations from choice, and who hesitate to seek employment on war work so long as it remains a storm center of conflict over questions of union control.

If it be definitely understood that the "status quo ante" shall be observed, so far as the closed and open shop is concerned, that is, that war work shall not be made the lever either to open a closed shop or to close an open shop, the field of possible labor controversy will at once be greatly reduced. Such a statement of policy would make clear to every one engaged in war work, employer or employee, exactly where he stands, and would be the most effective possible way of making available for such work the full labor supply of the country, both union and non-union.

Enlarged Duties for J. Leonard Replogle

J. Leonard Replogle, a member of the raw materials division of the War Industries Board, has been given enlarged duties. The order announcing the appointment is as follows:

"Under and subject to the raw materials division of the War Industries Board, J. Leonard Replogle is hereby appointed director of steel supply and shall have charge of the distribution and be responsible for the execution of all orders for iron and steel for the United States and allied Governments, including steel billets and bars for ordnance, but not finished ordnance or gun forgings."

Bristol Furnace Sold

ROANOKE, VA., Nov. 5.—The Bristol furnace of the Virginia Iron, Coal & Coke Co. has been sold to a Philadelphia purchaser. It is to be dismantled and it is understood that it will be shipped to Japan. It has an annual capacity of 50,000 tons and was last active in 1908.

Iron and Steel Markets

FURTHER PRICE FIXING

Manufacturers to Bring Others in Line

New Government Contracts for Shell Steel Will Reach 1,500,000 Tons

The situation has been further cleared by Government announcement on Nov. 5 of agreed prices on sheets, wrought pipe, fence wire, tin plate, cold-rolled shafting and scrap. The new finished-material prices, as carefully worked out by the steel manufacturers' committee, are in line with those previously fixed, and the Government makes the important statement that on products not yet covered by official schedules the manufacturers have agreed to adjust prices promptly. Thus it appears that further Washington announcements are not to be looked for, unless at any time a general revision should be made.

It is to be noted that on wrought pipe the new prices represent $4 a ton reduction from the last card of independent manufacturers, but an advance of $8 a ton in prices of the National Tube Co. In wire products the new basis is $10 a ton below prices for some time made by leading independent companies, and about $6 a ton above those of the American Steel & Wire Co., at which, however, little or no commercial product could be had.

While the price basis on which the iron and steel trade now finds itself through Government action is no bar to large production, mill efficiency is reduced both by the embargo on exports and by the way in which Government orders are given out. Frequent roll changes to meet priority requirements have been a handicap, and mill space has been held for ship-steel specifications that have not come as expected. Here and there slack has resulted, and commercial orders have not been ready at the moment to fill the gaps. Thus the market hears now and then that some mill is seeking prompt business at the agreed prices; then along comes more Government work. These dislocations are more or less disconcerting.

The ill-advised agitation of contract abrogation by the Federal Trade Commission has tended to restrict buying of steel for commercial uses. The trade has done no little readjusting on its own account since the shadow of Government price fixing fell upon it over four months ago. To-day the outlook is that the present price basis will not be changed Jan. 1, but official assurance to that effect should come soon, and it should be indicated also that no change will be made in the first half of 1918.

War steel requirements are looming up. Government shell steel now under inquiry amounts to 1,500,000 tons, of which 300,000 tons was distributed in the past week. For the destroyers recently let 60,000 to 70,000 tons of steel has been given out, largely plates.

A measure of the scarcity of plates is found in the estimate that Government merchant ships, representing entirely new demand, will take in each of the next two years 1,500,000 tons of plates. The total production of sheared plates ¼ in. and thicker was not quite 2,500,000 tons in 1916.

Besides the 30,000 cars for Russia, held up until responsibility for payments is firmly settled, and the 10,000 cars for French railroads, builders are to supply 5000 more cars for our expeditionary forces and upward of 6000 for domestic roads are under consideration.

Inability of certain manufacturers to count on steel supply promises to figure more and more in the war toll. The automobile industry is much disturbed by the announcement that alloy steel would be largely withheld from it; yet there is nowhere any definite knowledge as to the amount of such steel Government needs will call for, admitting that gun and airplane requirements will be heavy. It is estimated that the amount of alloy steel already released by the shrinkage in output of pleasure cars would be sufficient for 250,000 airplanes.

The readjustment of prices on various products into which rolled steel enters, such as nuts and bolts, is to be promptly worked out in line with the schedules the steel manufacturers have already made. As to nuts and bolts, opinions of producers show considerable variation. The way in which these various changes are carried out will be a matter of close Government observation.

Pig-iron buying has been encouraged by the definite putting out of differentials in the past week by the American Iron and Steel Institute committee. Transactions covering the first half of 1918 are more frequent, and some contracts have run up to 10,000 tons, all at the established prices.

Pig-iron production increased in October to 3,303,038 tons, or 106,550 tons a day, against 3,133,954 tons in the 30 days of September, or 104,465 tons a day. More furnaces blew in and the net gain for the month was 10. The 355 stacks active Nov. 1 have an estimated capacity of 109,059 tons a day, which compares with 107,250 tons for the 345 furnaces in blast Oct. 1. The year's output of coke pig iron up to Nov. 1 was about 32,100,000 tons, or 450,000 tons less than for the first ten months of 1916.

Pittsburgh

PITTSBURGH, Nov. 6. *(By Wire)*

The situation as to prices on some of the leading finished steel products and also on scrap has been cleared by the announcement from the Government at Washington Monday, Nov. 5, which established prices on sheets, pipe, cold rolled steel, plain wire, tin plate and on scrap. Interviews with prominent local steel manufacturers and several of the larger scrap dealers indicate strongly that the new prices announced by the Government are entirely fair and satisfactory and will be rigidly observed. The only exception to this is the price of 6.25c. on No. 28 gage galvanized sheets, this being regarded by some of the sheet manufacturers as

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 7, 1917.	Oct. 31, 1917.	Oct. 10, 1917.	Nov. 8, 1916.
No. 2 X, Philadelphia...	$34.25	$34.25	$33.75	$24.00
No. 2, Valley furnace...	33.00	33.00	33.00	24.00
No. 2 Southern, Cin'ti...	35.90	35.90	....	20.90
No. 2, Birmingham, Ala.	33.00	33.00	....	18.00
No. 2, furnace, Chicago**	33.00	33.00	....	25.00
Basic, del'd, eastern Pa..	33.75	33.75	33.75	25.00
Basic, Valley furnace....	33.00	33.00	33.00	23.00
Bessemer, Pittsburgh ...	37.25	37.25	37.25	27.95
Malleable Bess., Ch'go**	33.00	33.00	....	25.00
Gray forge, Pittsburgh..	32.75	32.75	32.75	23.95
L. S. charcoal, Chicago..	37.50	37.50	....	25.75
Rails, Billets, etc., Per Gross Ton:				
Bess. rails, heavy, at mill	....	....	....	$33.00
O.-h. rails, heavy, at mill	....	....	....	35.00
Bess. billets, Pittsburgh	*$47.50	*$47.50	$55.00	50.00
O.-h. billets, Pittsburgh.	*47.50	*47.50	55.00	50.00
O-h sheet bars, P'gh...	*51.00	*$51.00	....	50.00
Forging billets, base, P'gh	....	....	....	75.00
O.-h. billets, Phila.....	....	....	....	50.00
Wire rods, Pittsburgh...	57.00	57.00	85.00	60.00
Finished Iron and Steel, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Iron bars, Philadelphia..	4.085	4.25	4.25	2.659
Iron bars, Pittsburgh....	...	...	...	2.85
Iron bars, Chicago.....	4.50	4.50	...	2.40
Steel bars, Pittsburgh...	2.90	2.90	...	2.75
Steel bars, New York...	3.095	3.095	...	2.919
Tank plates, Pittsburgh.	†*3.25	†*3.25	...	4.00
Tank plates, New York..	...	...	...	4.169
Beams, etc., Pittsburgh..	3.00	3.00	...	2.75
Beams, etc., New York..	3.195	3.195	...	2.869
Skelp, grooved steel, P'gh.	*2.90	*2.90	...	2.70
Skelp, sheared steel, P'gh	*3.25	*3.25	...	2.80
Steel hoops, Pittsburgh..	...	...	...	3.00

*Agreed prices. †As yet only a few sales made.

**The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Nov. 7, 1917. Cents.	Oct. 31, 1917. Cents.	Oct. 10, 1917. Cents.	Nov. 8, 1916. Cents.
Sheets, black, No. 28, P'gh	5.00	...	...	3.50
Sheets, galv., No. 28, P'gh	6.25	...	...	5.00
Wire nails, Pittsburgh..	...	...	...	2.85
Cut nails, Pittsburgh....	...	...	...	2.80
Fence wire, base, P'gh..	...	...	...	2.80
Barb wire, galv., P'gh...	...	...	...	3.70
Old Material, Per Gross Ton.				
Iron rails, Chicago.....	$35.00	$34.00	$36.00	$23.00
Iron rails, Philadelphia..	38.00	38.00	38.00	21.00
Carwheels, Chicago	27.00	26.00	27.00	16.00
Carwheels, Philadelphia..	29.00	29.00	29.00	17.00
Heavy steel scrap, P'gh..	30.00	27.00	30.00	20.00
Heavy steel scrap, Phila..	25.00	25.00	25.00	17.00
Heavy steel scrap, Ch'go.	28.00	26.00	26.00	19.75
No. 1 cast, Pittsburgh...	27.00	27.00	29.00	17.00
No. 1 cast, Philadelphia.	28.00	28.00	28.00	17.00
No. 1 cast, Ch'go (net ton).	21.00	20.00	21.00	15.00
No. 1 RR. wrot, Phila...	35.00	35.00	38.00	23.50
No. 1 RR. wrot, Ch'go (net)	31.00	28.50	27.00	20.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt...	$6.00	$6.00	...	$7.50
Furnace coke, future....	6.00	6.00	...	4.00
Foundry coke, prompt...	6.00	†*6.00	...	7.00
Foundry coke, future....	6.00	†*6.00	...	5.00
Metals, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.	23.50	23.50	23.50	29.50
Electrolytic copper, N. Y.	23.50	23.50	23.50	29.50
Spelter, St. Louis.....	7.62½	7.75	8.00	10.50
Spelter, New York.....	7.87½	8.00	8.25	10.75
Lead, St. Louis.....	6.12½	5.62½	7.45	6.87½
Lead, New York.....	6.25	5.75	7.60	7.00
Tin, New York.....	68.00	66.00	61.00	42.25
Antimony (Asiatic), N. Y.	14.00	14.25	15.00	12.75
Tin plate, 100-lb. box, P'gh.	7.75	....	....	6.00

low. To sheet mills that are self contained, the price will allow a fair margin of profit, but to galvanizing plants that have to buy sheets in the open market at 5c., galvanize them, and sell them at 6.25c., the margin will be very light, and in the cases of a few concerns a spread of $25 per ton between prices of black and galvanized sheets may possibly mean a loss. The Government announced that it had the assurance of manufacturers that they will promptly adjust prices on all iron and steel products, other than those of which prices have been agreed upon, to the same general standard as those given out by the Government Monday, and also on Oct. 4. It is likely, therefore, that within a very short time manufacturers of steel products on which prices have not been named by the Government will get together and fix prices on their products. The makers of iron and steel tubes are to meet in this city to-morrow and new discounts on tubes will likely be ready for the trade within a few days. While all prices so far fixed by the Government and others to be arranged by the manufacturers through co-operation with the general committee of the American Iron and Steel Institute are in effect only until Jan. 1, it is the general impression here that the prices will be allowed to stand, unless it can be absolutely shown that quotations on some material are unfair and should be changed, but this is not likely to occur. As a result of the prices that have just come out and others to be named shortly, it is believed that very soon consumers will commence to cover on their needs for first quarter and first half of 1918. For this reason the volume of business this month and in December is expected to be much heavier than in the two preceding months.

Pig Iron.—W. P. Snyder & Co. announce the average price on Bessemer iron in October to have been $36.30 and on basic $33 at Valley furnace, based on sales of 1000 tons or more, these being the regular Government prices given out on Sept. 24 last. Compared with September, the price of $36.30 on Bessemer shows a decline of $9.15 and on basic of $8.34. There were sales in October of probably 100,000 tons of Bessemer and basic iron, and of this quantity the Jones & Laughlin Steel Co. is said to have bought upward of 60,000 tons of Bessemer and basic. During the recent labor trouble at its blast furnaces, this company lost a large output of pig iron, which it was compelled to come in the market and replace. The scarcity and bad delivery of coke by the railroads are seriously restricting blast furnace operations. At this writing, six blast furnaces in the Youngstown, Ohio, district are banked for lack of coke and the number may be increased before this week ends. The market on Bessemer and basic is very firm, and it is scarce and hard to obtain for this year's delivery. A fair amount of foundry iron is moving in small lots, but it is stated some large consumers have covered their needs of foundry iron for the first quarter of next year at the fixed price of $33 at furnace.

We quote as follows: Basic pig iron, $33; Bessemer, $36.30; gray forge, $32; No. 2 foundry, $33; No. 3 foundry, $32.50, and malleable Bessemer, $33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh districts being 95c. per ton.

Billets and Sheet Bars.—The new inquiry for steel is very dull, consumers being covered by contracts and deliveries by the mills are reported to be very satisfactory. So far as can be learned, none of the steel mills is freely offering Bessemer or open hearth billets at the fixed price of $47.50 or sheet bars at $51 at mill, but it is understood that some large consumers of sheet bars, notably tin plate mills, have arranged for their supply of bars for first six months of 1918 at the $51 price, and should this price be changed, the contracts will be re-adjusted to conform to any new prices on sheet bars, whether lower or higher, that may be made. We quote soft Bessemer and open hearth billets at $47.50 and sheet bars at $51, maker's mill Pittsburgh or Youngstown.

Ferroalloys.—There has been another severe decline in prices of 80 per cent domestic ferromanganese, which has been offered for prompt or future delivery at $250 per gross ton, delivered to buyer's mill. It is probable

the makers of ferromanganese, following the suggestion of the Government, will soon announce new prices on ferromanganese and other ferroalloys. We quote 18 to 22 per cent spiegeleisen at nominally $60 to $65 and 50 per cent ferrosilicon in carload lots at $130 to $140 delivered. It is likely, within a few days, producers of Bessemer ferrosilicon and silvery iron will adopt new prices and until this is done we omit quotations.

Structural Material.—Most of the new work being placed is coming from the Government, which has just asked bids on 4000 tons of structural shapes for a large new machine shop to be erected at Washington, the American Bridge Co. has taken 1000 tons for a new steel building for the General Electric Co. at Lynn, Mass., and 1000 tons of bridge work for the Pennsylvania lines west. We quote beams and channels up to 15 in. at 3c. at mill.

Plates.—The Government has placed contracts for 30,000 four-wheel freight cars for shipment to Russia, an order for this quantity placed some time ago having been later temporarily withdrawn. The American Car & Foundry Co. will build 10,000 cars, the Standard Steel Car Co. 10,000, the Pressed Steel Car Co. 7,750 and the Western Car & Foundry Co. 2,250. These cars will each take seven to eight tons of plates and small shapes, and contracts for this material have been placed by car builders with the mills. There is a freer selling of plates by the mills at the Government price of 3.25c. at mill, but the larger plate mills are filled up for a year to 18 months ahead, and are not taking new orders. It is said the Carnegie Steel Co. is furnishing every month to the Government 60,000 tons of plates or more. The entire output of the Liberty plate mill, just finished at Munhall, is going to the Government and will continue to do so for many months to come. This mill is already making good records for output for a new mill, and when in smooth working order will turn out close to 20,000 tons of plates per month. We quote ¼ in. and heavier sheared plates at 3.24c. at mill.

Steel Rails.—It is not known as yet whether prices on light rails and standard sections will be adjusted by the mills to a lower basis, but something definite about this is expected to come out in a short time. Very little new business is being placed, and nominal prices on standard section and light rails are given on page 1147.

Sheets.—The Government prices on sheets were announced from Washington on Monday, Nov. 5, and are based on 4.25c. for No. 10 blue annealed, 5c. for No. 28 Bessemer black and 6.25c. for No. 28 galvanized per lb., all f.o.b. Pittsburgh, for both Bessemer and open-hearth stock. Formerly it was the practice of some sheet mills to charge an advance of 25c. per 100 lb. for sheets rolled from open-hearth stock over the Bessemer price, but the Government prices do away with this custom. These new prices on blue annealed and black sheets were those that were generally expected by the trade, but on galvanized sheets the price is $20 per ton less than looked for. Based on the present price of spelter, which is about 7.75c., this price of 6.25c. on No. 28 galvanized sheets is regarded as absolutely fair to sheet mills that are self-contained, but to small mills that have to buy black sheets in the open market at 5c. and galvanize them for $25 per ton, it will not allow much profit. Prices of labor and acids are so high that it is probable the cost of some galvanizers is over $25 per ton. The practice was to charge about $21 per ton, but labor, acid and other items have gone up so much that the price of galvanizing has been very much increased. The new Government prices on sheets are until Jan. 1 only, being subject to revision on or after that date. How far ahead the mills will sell at these prices has not been determined, but it is likely some mills will sell for first quarter and probably some for first half. It is not generally expected that these new prices on sheets will be changed on Jan. 1 or shortly after, unless it should be found that some of them are unfair, but this hardly seems likely. The new price of 5c. on No. 28 Bessemer black sheets is practically the price at which this grade of sheets has been selling for a month or more, but the price of 6.25c. on galvanized is fully $20 to $25 per ton less than the price recently ruling in the open market. We quote blue annealed sheets No. 10 gage 4.25c., No. 28 Bessemer black 5c., No. 28 galvanized 6.25c. in carloads f.o.b. Pittsburgh, from Bessemer or open-hearth stock. The new prices are given in detail on page 1147.

Tin Plate.—The Government has announced the price of $7.75 on tin plate for Bessemer or open-hearth stock f.o.b. Pittsburgh. This price is 25c. or more lower than the trade looked for, some believing it would be $8 and some possibly $8.20 per base box. However, this price of $7.75 per base box is exactly the same as ruled on tin plate from open hearth stock for the last half of this year. The price is regarded by manufacturers of tin plate as eminently fair. There seems to be no doubt that very soon consumers of tin plate will be covered for the first six months of 1918 at the $7.75 price. The request of the Government that the mills sell their product for first nine months of 1918 was withdrawn, and it is not believed any makers will sell beyond the first six months of next year at the new price. Already large consumers of tin plate have had their regular sources of supply make reservations on their books for their needs, and all this business will be booked at the $7.75 price. Based on sheet bars at $51, the new price will allow a good margin of profit, and with the enormous demand that confronts the tin plate makers for their 1918 output, it would be an extremely profitable one in the tin plate trade. While the price on tin plate is subject to revision on Jan. 1 or after, it is not believed now that it will be disturbed. The new price will also apply on small lots of tin plate from stock for prompt shipment. We therefore quote coke plate at $7.75 per base box, f.o.b. Pittsburgh, for Bessemer or open-hearth stock.

Wire Products.—The Government has announced the price of $3.25 on plain wire per 100 lb. f.o.b. Pittsburgh and has further stated that the wire and steel manufacturers have agreed promptly to adjust maximum prices of all iron and steel products, other than those on which prices have been agreed, to the same general standard as those which have been announced. Accepting this statement, the new prices on wire products figure out $3.50 for wire nails, $3.45 for bright basic wire, $3.25 for numbers 6 to 9 annealed fence wire, $3.95 for galvanized wire; $4.35 for galvanized barbed wire and fence staples and $3.65 for painted barb wire. Cement coated nails are $3.40 base, and the discounts on woven wire fence have been tentatively agreed upon as 47 per cent off list for carload lots, 46 per cent for 1000 rod lots and 45 per cent for small lots, all f.o.b. Pittsburgh. These new prices represent a decline of about $10 per ton on wire nails and wire below prices quoted for some months by the independent mills, representing an advance of about $6 per ton over the price quoted by the American Steel & Wire Co. until about two weeks ago, when that company announced an advance of $6 per ton on its price. These prices have been adopted by all the wire and wire nail makers and will apply on all business booked, starting with Monday, Nov. 5. It is understood that existing contracts are not to be disturbed and that terms are the same as before. Now that prices on wire products have been settled, it is believed that the demand will very soon show a decided increase, as it has been dull for some time, buyers holding off placing orders until the new prices came out. Prices on wire products are given in detail on page 1147.

Wire Rods.—There is a fairly active demand for wire rods, both from the domestic and export trade, but the local makers report they are pretty well filled up over the remainder of this year, and are not quoting on most of the inquiries that come before them. However, some small sales of soft Bessemer and open hearth rods ranging up to 500 tons have been left to the manufacturers to work out for themselves, and prices will probably vary a good deal. However, as nearly as can be learned, the present prices on rods made from high carbon steel are about $85 to $90 on special steed rods, carbons running 0.40 to 0.60, $96

and $95, and above 0.60 carbon $100 to $110. We quote soft Bessemer and open hearth rods at $57 per gross ton f.o.b. Pittsburgh. Detail prices on rods are given on page 1147.

Hoops and Bands.—The Government has not announced any prices on hoops and bands, but it is probable that these will very soon be readjusted to a lower basis by the manufacturers. The price of steel bands will no doubt be put at 2.90c., extras as per the steel bar card, and steel hoops will range a little higher, probably 3c. to 3.50c. at mill, there having been in the past a slight differential in the price of steel hoops over those bands. Until the new prices are given out by the manufacturers we omit quotations.

Iron and Steel Bars.—As yet the manufacturers of refined iron bars have not yet announced lower prices to put them more in conformity with prices on steel bars, but this will no doubt be done in a short time. Local mills that roll iron bars report they are filled up for some months ahead, so that any new price they may name on iron bars would be good only until Jan. 1, and would not cut much figure in the market, as the mills have no iron bars to sell for delivery this year. However, a lower price is likely to be adopted on iron bars within a short time so that there may be a basis on which the mills can figure with large consumers for their needs for first quarter and first half of next year. The new demand for both iron and steel bars is only fair, consumers being well covered over the remainder of the year, and some large consumers of steel bars over first half of next year. We quote steel bars at 2.90c. at mill, f.o.b. Pittsburgh, and we omit prices on iron bars until the market is more definitely known.

Shafting.—On Monday, Nov. 5, the Government announced a discount of 17 per cent on shafting from the discount list adopted on March 15, 1915. For some time the largest discount allowed on steel shafting was 10 per cent and the extra 7 per cent announced by the Government means a reduction over the former lowest price of $7 per ton. It is likely that some contracts made recently for large quantities of shafting on which the price was left open will be adjusted to the basis of 17 per cent off. This discount makes the price of shafting 4.15c. per pound at mill for base sizes and on large lots. The demand has been quiet for some time, consumers waiting for the Government to announce prices. It is likely, now that this has been done, that the new demand for shafting will be much heavier in a short time. We quote cold rolled shafting at 17 per cent off list, f.o.b., Pittsburgh.

Railroad Spikes and Track Bolts.—It is very likely that within a few days makers of spikes and track bolts, probably through the American Iron and Steel Institute general committee, will announce new and lower prices on both spikes and track bolts to put them more in line with prices announced by the Government on other forms of finished steel. Until this is done, we repeat former prices, which are now purely nominal and are given only for purpose of record on page 1147. The demand for spikes and track bolts has been very dull for some time.

Nuts and Bolts.—It is not known at this writing whether the makers of nuts and bolts will adopt new discounts, naming lower prices in view of the Government prices on other forms of finished steel that came out yesterday. It is recognized that present prices of nuts and bolts are somewhat higher and out of line with prices on other forms of finished steel and for this reason there may be a revision on the whole list of nuts and bolts to a lower basis. Until this is done, we repeat present discounts which are given in detail on page 1147. The demand for nuts and bolts has been quiet for some time.

Cold Rolled Strip Steel.—Recently the makers of cold rolled strip steel reduced prices from 9c. to 7c. per pound or a reduction of $40 per ton. It is believed that this price of 7c. per pound will be allowed to remain, but this is not known definitely at this writing. A meeting of cold rolled strip steel makers will be held at an early day to consider the situation as regards prices. We repeat our former price of 7c. per pound at mill for large lots. Terms are 30 days less 2 per cent off for cash in 10 days when sold in quantities of 300 lb. or more.

Rivets.—It is not unlikely makers of rivets will very soon announce a reduction in prices to put them more on a parity with prices on other forms of finished steel. It is probable a meeting of rivet makers will be held shortly to consider the price situation. Until a definite change is made, we repeat former nominal prices of $5.25 per 100 lb. for structural rivets and $5.35 for conehead boiler rivets, f.o.b., Pittsburgh. These are purely nominal prices and are printed for purpose of record only.

Wrought Pipe.—The Government has announced discounts of 52 and 5 and 2½ per cent on ¾-in. to 3-in. black steel pipe which means a list discount of 51 per cent and an extra discount of 1 point and 5 and 2½ per cent to the largest jobbing trade. Basing this card discount at 51 per cent, it means a straight advance of $8 per ton in prices of National Tube Co., which have been 55 per cent off based on the card of April 2 last. On the May 1 card, which is still in use by most of the independent mills, the new Government prices show a reduction of $4 per ton. All the manufacturers of steel pipe will send out new discount cards on which discounts have been extended two points, or a reduction of $4 per ton. The manufacturers of iron pipe have decided that for the time being they will adhere to the present discounts on both black and galvanized iron pipe, but will send out new cards, reaffirming the May 1 discounts, the new cards to be dated as in effect from Nov. 7. The action of the Government now puts the price of black and galvanized iron and steel pipe on a standard basis of discounts, a condition that has not existed in the pipe trade for some months, there having been for some time no less than three separate discount cards that were being used. The Government discounts on black and galvanized steel pipe which have been adopted by all the mills and also the discounts on black and galvanized iron pipe which have been reaffirmed are given on page 1147.

Boiler Tubes.—On Wednesday, Nov. 7, a meeting of manufacturers of lap-welded steel and standard charcoal iron tubes was held in this city to consider the price situation on tubes and to adopt new discounts which will show very much lower prices than those in effect for a long time. These new discounts were not available at the time this report was written and so we repeat for this week former nominal discounts which have not correctly reflected actual prices for a long time. These nominal discounts are given on page 1147.

Coke.—Moderate new sales of furnace and foundry coke are being made at the Government price of $6 per net ton at oven, but it is claimed that a very much larger quantity of furnace and foundry coke is being sold at higher prices and in devious ways that perhaps might not bear close scrutiny by the Government or the public. Recently an absurd report was printed that the Government price of $6 per ton on furnace and foundry coke was not legal, the claim being made that the price was fixed by the War Industries Board at $6, and that this board had no authority to act in the matter. The facts are that the War Industries Board submitted to the President the new price on furnace and foundry coke and he approved it at once. The coke producers wanted a price of $6.50 on furnace coke, but the President made it $6 at oven. Some of the larger producers of the best grades of furnace coke that have contracts at the open market price are rigidly filling them and shipping to consumers as much furnace and foundry coke at the $6 price as they did when the price of furnace coke was as high as $13 and $13.50 and foundry coke $14 and even $14 at oven. Credit should be given these concerns for their honest dealings with their customers, but censure is certainly due some of the smaller coke operators who have not met the issue squarely and are showing an unpatriotic spirit. We quote blast furnace and 72 hour foundry coke at $6 per net ton at oven for prompt delivery and on contracts. The *Connellsville Courier* gives the output of coke in the upper and lower Connellsville regions for the week ending Oct. 27 as 305,980 tons, a decrease over the

previous week of 40,259 tons. This is the largest decrease in output of coke shown for some months and is due primarily to shortage of labor and perhaps to other causes.

Old Material.—The Carnegie Steel Co. has purchased a limited tonnage of heavy melting steel during the past week, but otherwise there has been limited buying. Interest naturally centers in the naming of prices by the Government at $30 per gross ton, f.o.b. consuming point, on No. 1 heavy melting steel, $20 on cast-iron borings and machine-shop turnings and $35 on No. 1 railroad wrought. This is the basis which was recommended by the iron and scrap committee of the American Iron and Steel Institute some time ago. Dealers quote for delivery in Pittsburgh and other consuming points that take Pittsburgh freight rates, per gross ton, as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$30.00
No. 1 foundry cast	27.00 to 28.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md., and Franklin, Pa.	31.00 to 32.00
Hydraulic compressed sheet scrap	22.00 to 23.00
Bundled sheet scrap, sides and ends, f.o.b. consumer's mill, Pittsburgh district	21.00 to 22.00
Bundled sheet stamping scrap	19.00 to 20.00
No. 1 railroad malleable stock	23.00 to 24.00
Railroad grate bars	16.00 to 17.00
Low phosphorus melting stock	38.00 to 40.00
Iron car axles	41.00 to 42.00
Steel car axles	41.00 to 42.00
Locomotive axles, steel	48.00 to 50.00
No. 1 busheling scrap	22.00 to 23.00
Machine-shop turnings	18.00 to 18.50
Cast-iron wheels	28.00 to 30.00
Rolled steel wheels	33.00 to 34.00
*Sheet bar crop ends	33.00 to 34.00
Cast-iron borings	20.00
No. 1 railroad wrought scrap	35.00
Heavy steel axle turnings	22.00 to 23.00
Heavy breakable cast scrap	22.00 to 23.00

*Shipping point.

Chicago

CHICAGO, Nov. 5.

Requirements coming both directly and indirectly from the Government, all entitled to first consideration as essentials in the prosecution of the war, are being given in steadily growing volume to independent mills. In some cases, as with plates and shapes for submarine destroyers, the orders require such prompt fulfilment that rolling schedules are sadly disarranged, and the consequent frequency in changing rolls is doing anything but help along maximum production. The plaint of more than one mill man is that they do not know where they stand. Of all iron and steel products, pig iron seems to be pursuing the most serene course, the agreed prices of iron having been generally accepted with the result that business is going forward so far as there is iron to sell. A mighty demand, most of it indirect, is expected to reach the furnaces, a realization of which is causing some melters to ask that their deliveries be anticipated. That they have no plates, shapes or bars to sell for delivery this year continues to be stated by mill representatives, but rumor has it that an Eastern mill is offering all these products at the newly established levels. Some standard section rails have been offered at $67. The makers of iron and rail carbon bars cling to their quotations of 4c. and upward, but recognize that these prices will collapse when mild steel bars can be had in sufficient quantity at 2.90c., meanwhile their business is of the straggling sort. Consumers of bolts and nuts are specifying in an active manner, and instances have come to light where railroads and implement makers want to cover for 1918. The old material market stiffened considerably following a purchase of melting steel by the leading interest. Ferromanganese has been offered at $250.

Pig Iron.—Buying has been active in the past week and there is a considerable amount of inquiry yet to be satisfied. Most of the sales have been for 1918 delivery, and all have been on the basis of the price agreed on between producers and the Government. The principal Northern interest is selling chiefly against the expected output of a furnace to be blown in next February. Most of the producers and their agents are looking for heavy Governmental demands, most of them coming indirectly, and these must be filled, whatever happens to private requirements, and perhaps it is a realization of this fact that is causing consumers to request that shipments be anticipated to an extent that would bring 1918 shipments into 1917. In the past two or three days, the representative of a Southern furnace has sold about 2000 tons, chiefly for next year, and is considering inover. The same seller has made some scattering sales for delivery this year, all on the basis of official prices. Southern foundry iron of another brand is not yet released for next year, despite the more active inquiry. The announcement basing Government prices on analyses is acceptable to all, so far as method goes, for the reason that practically all of the Northern iron sold in quiry for several thousand tons additional. The iron offered for next year runs in silicon from 1.50 to 3.50 and this territory has long been sold on analysis, rather than by fracture in view of the greater part of Northern iron being chill cast. To a lesser extent the same situation exists with Southern iron, although in some cases both fracture and analysis are considered. A few oldtimers persist in depending on fracture for guidance, and they are accommodated. In general, it is considered that those who adjusted prices could not well have proceeded otherwise than they did, and that the ultimate effect will be wholesome. Lake Superior charcoal iron is being sold, so far as furnace capacities permit, at $2.50 per gross ton above base for iron averaging 1.25 per cent silicon. October was an active month with the makers, sales being limited only by the quantity available, the furnaces being well sold up to July 1. Consequently sales were made chiefly to old customers. One furnace sold over 7000 tons in the month, part of which is for delivery in the first part of next year. There is fair inquiry for low phosphorus pig iron for the remainder of this year and first half of next. The inquiries are scattered widely over the United States with several round tonnages wanted for export. A Western maker expects considerable activity and that most of the inquiries will be closed on the basis of agreed prices. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 1 to 4	$37.50
Lake Superior charcoal, Nos. 5 and 6 and Scotch	40.00
Northern coke foundry, No. 1	33.50
Northern coke foundry, No. 2	33.00
Northern coke foundry, No. 3	32.50
Northern high-phosphorus foundry	33.00
Southern coke No. 1 foundry and 1 soft	37.50
Southern coke No. 2 foundry and 2 soft	37.00
Malleable Bessemer	36.50
Basic	33.00
Low-phosphorus	58.00
Silvery, 7 per cent	44.54

Ferroalloys.—While the general asking price for 80 per cent ferromanganse is $275, offerings have been quietly made by producers at $250, delivery this year or in the early part of next. A moderate tonnage of 50 per cent ferrosilicon for delivery over the first half of 1918 is being offered at $150. Ten per cent Bessemer ferrosilicon is quoted at $57.50, furnace, and 11 per cent at $60.84, these being agreed prices.

Plates.—Government demand for plates for various purposes overshadows all other requirements, delivery for some of the material being wanted this month, especially that to enter submarine destroyers. In fact, the promptness with which these plates are wanted is likely to play havoc with rolling schedules. Government orders in increased volume are coming to the leading local independent. Rumor persists that Eastern producers are offering plates to domestic consumers at the agreed price of 3.25c., Pittsburgh, delivery to be reasonably prompt, but the representatives of all the mills are unanimous in saying they have none to sell this year.

For material out of warehouse, the quotation is unchanged at 7c.

Structural Material.—Except for Government needs it cannot be learned that much is stirring, although in

shapes, as in plates, it is said that an Eastern mill which has avoided long-time contracts is offering material at the agreed level of 3c., Pittsburgh, with verification equally as intangible. Bids have been taken on a warehouse for Butler Bros., Chicago, which will require 7500 tons of shapes and 1500 tons of reinforcing bars, but a Class B priority certificate will probably be necessary to insure delivery. A theater building in this city which will require about 1000 tons of standard shapes and 1500 tons of Bethlehem shapes has been revived, but there is believed to be little chance of the project coming to fruition in view of the Government's attitude toward expansion not essential to the conduct of the war, also the seeming impossibility of getting open cars in which to ship material not needed for war purposes. No new car inquiries are reported, but six small lettings of structural work are announced, the largest requiring 446 tons. They follow:

Addition to Hotel Stewart, San Francisco, 200 tons. To Central Iron Works.
Chinese Bank Building, San Fracisco, 200 tons. To Central Iron Works.
United States Government, paint shop at Mare Island, Cal., 203 tons. To Western Iron Works.
Office building for H. P. Hynds, Cheyenne, Wyo., 249 tons. To Omaha Structural Steel Co.
International Harvester Corporation, forge shop building, Milwaukee, Wis., 446 tons. To Morava Construction Co.
St. Louis Briquette Machine Co., shop at St. Louis, 144 tons. To Scully Steel & Iron Co.
For material out of warehouse the quotation is 5c.

Bars.—The makers of both iron and rail carbon bars are in a most uncertain state of mind, the Government not having fixed any price for their products. With the agreed price of mild steel bars at 2.90c.—and sales having been made at that figure—consumers are not disposed to pay 4c. and upward for iron or high carbon bars, consequently these markets are extremely quiet. A little business has been done in rail carbon bars at 4c., Chicago. It is conceded that the makers of both rail carbon and iron bars will have to accept 2.90c. when mild steel becomes more easily obtainable at that figure. The high carbon bars usually sell for less than mild steel, and they would probably approach the 2.90c. level without delay were it not for the high cost of re-rolling rails from which they are made. The makers would be relieved by some decisive action, one way or the other. Meanwhile the nominal price of bar iron is 4.50c., Chicago, and that of rail carbon 4c. to 4.25c., Chicago.

We quote warehouse prices for Chicago delivery as follows: Soft steel bars, 4.50c.; bar iron, 4.50c.; reinforcing bars, 4.50c. base, with 5c. extra for twisting sizes ½ in. and over and usual card extras for smaller sizes; shafting list plus 5 per cent to plus 10 per cent.

Sheets.—The maximum prices just announced for sheets are regarded by sellers as fair, certainly as fair as putting plates at 3.25c., and it is asserted that mills making both will quote even more readily on black sheets at 5c. than on plates at 3.25c. As a matter of fact, the new maximum sheet prices are not far below the prices at which business has been done recently. The news as first received was so meager that producers were puzzled as to whether open-hearth and Bessemer steel were on the same basis and they at once took steps to ascertain whether open-hearth was entitled to an extra of 25c. In view of the stipulation that maximum production must be maintained, makers will exercise discretion in committing themselves. It is reiterated that the maximum prices apply only to business done with the Government, its allies and domestic consumers. Commercial consumption in allied countries and in neutral countries will not be affected.

We quote for Chicago delivery out of stock, regardless of quantity, as follows: No. 10 blue annealed, 8c.; No. 28 black, 8.50c.; and No. 28 galvanized, 9.50c.

Bolts and Nuts.—The market is much more active, consumers evidently being convinced there is a shortage in prospect, with the result that they have released specifications which they were holding up in the belief that lower prices might be obtainable. Both railroads and agricultural implement interests have sought to buy for next year, and it is likely that some large contracts will be closed soon. Bolt and nut makers emphasize the difficulty they are meeting in obtaining sufficient raw material. Unless there is Government intervention it is not likely that quotations will be reduced, and what the Government will do is a matter of debate. For prices and freight rates see finished iron and steel, f.o.b., Pittsburgh, page 1147.

Store prices are as follows: Structural rivets, 5.50c.; boiler rivets, 5.60c.; machine bolts up to ⅞ x 4 in., 40-10; larger sizes, 35-5; carriage bolts up to ⅞ x 6 in., 40-2½; larger sizes, 30-5; hot pressed nuts, square, $2, and hexagon $2 off per 100 lb.; lag screws, 50 per cent off.

Wire Products.—Makers of wire products have no readjustments to announce, but will make changes soon, and the same is true of other products on which maximum prices were set.

Cast Iron Pipe.—Kansas City, Mo., Nov. 7, will open bids on 600 tons. Langdon, N. D., placed about 100 tons with the United States Cast Iron Pipe & Foundry Co., and an equal amount with the American Cast Iron Pipe Co., Brigham, Utah, has taken bids on 350 tons, the successful bidder being not yet reported.

Quotations per net ton, Chicago, are as follows: Water pipe, 4 in., $53.50; 6 in. and larger, $50.50, with $1 extra for class A water pipe and gas pipe.

Rails and Track Supplies.—Standard section rails have been offered, according to good authority, at $67, delivery this year, by a mill outside of this territory, but whether sales resulted is not yet reported. As to the railroads being willing to contract for next year, there can be no question, and it may be that some deals have been quietly put through. The representative of one mill asserts that his company is taking care of its railroad patrons. The following quotations are given more as a matter of record, than as representing the current market.

Standard railroad spikes, 4.50c. to 5.25c., base; small spikes, 4.75c. to 5.50c., base; track bolts with square nuts, 5.50c. to 6c., all in carloads, Chicago; tie plates, $70 to $90 f.o.b. mill, net ton; standard section Bessemer rails, Chicago, $38, base (nominal); open hearth, $40 (nominal); light rails, 25 to 45 lb., $70; 16 to 20 lb., $71; 12 lb., $72; 8 lb., $73; angle bars, 3.25c., base.

Old Material.—That maximum prices had been fixed on heavy melting steel, cast borings, machine shop turnings and railroad wrought occasioned surprise, as the belief that such action would not be taken was widespread. The first day of restricted prices brought no change to the market, and none will come until the price limits are digested. Dealers would naturally like to obtain the maximum prices, especially in view of the fact that these prices are higher than have heretofore prevailed. All call $30 fair for heavy melting steel, but they are not sanguine about getting it. In the past week, a large consumer paid $29 for both heavy and shoveling steel, but another large consumer still offers only $28 for melting steel and $26 for shoveling. Merely naming the maximum does not make the market. The mills must do that by buying, it is stated. Some dealers assume that the maximum prices were fixed in equitable relation to the fixed prices of finished steel. Therefore, they feel that they should get the maximum prices, asserting that if they do not, the mills will be enabled to increase their profits. A consumer of railroad wrought, the maximum of which was fixed at $35, pronounced the price higher than he had expected. It is $2 to $3 higher than the recent market. With bar iron at 4.50c., the makers could afford to pay $35 for wrought, but should bar iron drop to the level of mild steel bars, they could not pay anywhere near the maximum of their scrap. Except for occasional purchasing, and the buying by the leading interest of a limited quantity of melting steel, there has not been much movement in the market, but prior to the announcement of government prices, prices were stronger. The interest referred to bought heavy melting, shoveling steel and some structural stock, paying $29 for each, thereby ignoring usual differentials. It is asserted by dealers that the market will not go down, the statement being based on the knowledge that at least some of the mills are running short of material and rapidly approaching the time when they must enter the market. No one seems to know what action, if any, may be expected on the part of the Government. Lists have been issued by the Atchison, Topeka & Santa Fe, the Union Pacific, Pennsylvania Lines and Great Northern,

the total representing a good-sized tonnage but one not up to normal. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton
Old iron rails	$35.00 to $36.00
Relaying rails	50.00 to 55.00
Old carwheels	27.00 to 28.00
Old steel rails, rerolling	35.00 to 36.00
Old steel rails, less than 3 ft.	32.00 to 33.00
Heavy melting steel scrap	28.00 to 29.00
Frogs, switches and guards, cut apart	28.00 to 29.00
Shoveling steel	27.00 to 28.00
Steel axle turnings	20.00 to 21.00

	Per Net Ton
Iron angles and splice bars	$34.00 to $35.00
Iron arch bars and transoms	35.00 to 36.00
Steel angle bars	24.00 to 25.00
Iron car axles	40.00 to 41.00
Steel car axles	40.00 to 41.00
No. 1 railroad wrought	31.00 to 32.00
No. 2 railroad wrought	28.00 to 29.00
Cut forge	28.00 to 29.00
Pipes and flues	18.00 to 19.00
No. 1 busheling	21.00 to 22.00
No. 2 busheling	14.50 to 15.00
Steel knuckles and couplers	29.00 to 30.00
Coil springs	36.50 to 37.50
No. 1 boilers, cut to sheets and rings	18.00 to 19.00
Boiler punchings	30.00 to 31.00
Locomotive tires, smooth	31.00 to 32.00
Machine-shop turnings	15.00 to 16.00
Cast borings	15.00 to 15.75
No. 1 cast scrap	21.00 to 22.00
Stove plate and light cast scrap	16.50 to 17.00
Grate bars	15.00 to 16.00
Brake shoes	16.00 to 17.00
Railroad malleable	25.00 to 26.00
Agricultural malleable	21.00 to 22.00
Country mixed scrap	16.50 to 17.00

Philadelphia

PHILADELPHIA, Nov. 5.

The greatest activity in this market is in pig iron. Orders are now being quite generally accepted for delivery in the first half of next year, and there is a fairly large inquiry, some of which is for good sized tonnages. The Pennsylvania Railroad Co. wants about 13,750 tons of various grades for its Altoona shops. A Virginia company has sold about 10,000 tons of foundry iron for the first half. Some Alabama foundry iron in small tonnages has been sold for prompt delivery at $33, base, at furnace. The fact that consumers are willing to pay a delivered price of about $38.20 indicates the present scarcity of spot iron from eastern Pennsylvania furnaces. An eastern Pennsylvania steel mill has bought 5000 to 6000 tons of basic iron for prompt delivery. Between 2000 and 3000 tons of standard low phosphorus iron has also been sold. Some consumers of iron have been holding off in the expectation that prices will be reduced by the Government on Jan. 1. Marked improvement in the structural steel situation, so far as deliveries are concerned, is noted, and it is asserted in a few quarters that there will be plenty for all the building that will be done during the war. Sheared plates are being offered for delivery in 30 to 60 days by a new producer. Offerings of fairly prompt delivery of universal plates are made by a few mills. A number of mills are preparing to accept contracts for finished steel for first quarter delivery, and while there will undoubtedly be an easing of the situation with regard to new business for the commercial trade in the very near future, it is certain that the Government requirements will not leave enough to satisfy all of the demands and many manufacturers must content themselves with a short supply. Although there is considerable discussion in the trade as to abrogation of contracts by Congress, there are few who are willing to believe that the Government will take such a drastic step. It is pointed out that where one consumer might gain by the abrogation of contracts another would lose. The general effect on business, it is held, would be demoralizing.

Pig Iron.—A Virginia iron company opened its books a few days last week for first half delivery and easily disposed of 10,000 tons of foundry grades, all that it desired to sell at this time. These were the first orders this company had taken for first half since last April, when a fair tonnage was sold at a delivered price of $38. All of the company's regular customers were given an opportunity to obtain a portion of the iron. Some, it developed, were not anxious to buy. A few feel that the Government is likely to revise pig iron prices downward on Jan. 1, and they would prefer to wait. Quite a number of foundries have not used all of the iron they bought for this year because of the scarcity of molders, and they have a supply sufficient to carry them into next year. Cast iron pipe foundries, hardware manufacturers and stove makers all complain of poor demand for their products, and they are curtailing production. The Alan Wood Iron & Steel Co. came into the market last week for 5000 to 6000 tons of basic iron for urgent requirements. It obtained about half of this quantity from an export shipment, which had been held up for lack of a license, and the other half in various smaller lots. Between 2000 and 3000 tons of standard low phosphorus iron were sold, and the price will be as fixed by the American Iron & Steel Institute committee. Although it was not required by the purchasers, some of the low phosphorus iron sold was below 0.04 in phosphorus, therefore they must pay a premium of $1.50 per gross ton for each reduction of 0.005 per cent below that figure, whether they require the phosphorus that low or not. In other words, the buyer will not always be able to choose the grade he wants, but must take what he can get, even though he pays a higher price than is really necessary for his requirements. The recommendations of the American Iron & Steel Institute committee are generally approved and will without doubt be promptly accepted as a workable basis for future business. The premiums to be charged for high manganese iron are left to the furnaces for adjustment according to the usual customs. The Virginia furnaces have adopted a schedule providing for a premium of 50c. per gross ton for iron containing 1.00 to 1.50 per cent manganese and $1 additional for each half unit above that quantity, and this will undoubtedly become the custom in this market inasmuch as most of the high manganese iron comes from Virginia furnaces. Various other differentials will be worked out by the sellers, particularly with relation to variations in sulphur and phosphorus content. It is definitely established that Southern furnaces will not sell below the $33 base price at furnace to compete with eastern Pennsylvania or Virginia furnaces. A few small tonnages for prompt delivery to this district have been sold in the past week, the buyer paying the $5.20 freight rate from Birmingham. This illustrates the scarcity of spot iron from eastern Pennsylvania furnaces. Inquiries for next year are coming in freely, among them being one for an aggregate of 13,750 tons for the Altoona shops of the Pennsylvania Railroad Co. The specifications call for charcoal, low silicon, high manganese and foundry iron. The Norfolk & Western Railroad and the Chesapeake & Ohio Railroad have announced an advance of about 52c. per gross ton in the freight rate on pig iron from Virginia furnaces to all points in the East, but does not apply on westbound shipments. The advance was made on five days' notice, as provided under the regulations of the Interstate Commerce Commission, but shippers have the right of appeal, and if there are protests a hearing will undoubtedly be granted. This makes the freight rate into the Philadelphia district about $3.27 per gross ton. We quote the following standard grades at furnace; to these prices the freight rate to destination should be added:

Eastern Penna. No. 1 X	$34.50
Eastern Penna. No. 2 X	33.50
Eastern Penna. No. 2 foundry	33.00
Virginia No. 2 X	33.50
Virginia No. 2 foundry	33.00
Basic	33.00
Gray forge	32.00
Bessemer	36.30
Standard low phosphorus	53.00
Low phosphorus (copper bearing)	50.00

Coke.—Despite the promise of the Fuel Administration at Washington to rush coke to steel mills at work on Government contracts, there has been little relief in the coke situation in this district. The Eastern Steel Co. was obliged to bank one of its furnaces. Other steel mills are running at about 60 to 75 per cent of capacity, largely because they cannot get enough coke.

Ferroalloys.—Demand for ferromanganese is light. A few sales of small tonnages for prompt delivery have been made in the past week at $250, and there are

reports that this price has been slightly shaded. Producers of spiegeleisen are quoting $67.50 to $70 at furnace, with little being done. A number of contracts have been taken, however, at about these prices, with the proviso that any unfilled tonnage when the Government price is announced shall be delivered at the new price.

Billets, Slabs, Etc.—There have been a few small sales of forging billets, but so far as can be learned none of re-rolling billets or slabs has been made since the Government prices were announced.

Sheets.—Pending the announcement of Government prices on sheets (which will be found on another page of this issue) there has been very little business in sheets in this market during the past week.

Structural Material.—Although the Government will require from 50 to 75 per cent of the capacity of many of the mills in this district for shipbuilding, it is becoming apparent that there will be a fair quantity of material remaining for such building as is likely to be done during the war. The Bethlehem Steel Co. is prepared to take on a considerable tonnage of its special building shapes. Even a large building project, requiring from 2000 to 4000 tons, might not find it difficult to get satisfactory deliveries, possibly from three to five months.

Plates.—The Bethlehem Steel Co. has started its new 110-in. plate mill and is offering limited tonnages of sheared plates for delivery in 30 to 60 days at the Government price. Offerings of universal plates for fairly prompt delivery are more common. Within a week, or at the most two or three weeks, several mills will doubtless be accepting business for the first quarter. In view of the large Government requirements, it is doubtful, however, whether there will be enough to meet the demand of civilian business, and mills will probably make a division among their regular customers of their excess over Government orders.

Iron and Steel Bars.—Comparatively little is doing in steel bars from mills, though warehouses are enjoying a good business. Concrete reinforcing bars are moving fairly well. The Philadelphia Electric Co. has just placed an order for 2600 tons for its new plant. Iron bar mills are pretty well sold up for this year. A few orders are being placed at prices ranging from 4.50c. to 5c., Pittsburgh.

Old Material.—The market is in a waiting attitude. Talk of price fixing doubtless is largely responsible for the inactivity. We quote the following prices, which are largely nominal, for delivery in the Philadelphia district:

No. 1 heavy melting steel	$25.00 to $30.00
Steel rails, rerolling	38.00 to 40.00
Low phosphorus heavy melting	35.00 to 38.00
Old iron rails	38.00 to 40.00
Old carwheels	29.00 to 31.00
No. 1 railroad wrought	35.00 to 40.00
No. 1 forge fire	22.00 to 23.00
Bundled sheets	22.00 to 23.00
No. 2 busheling	15.00 to 16.00
Machine shop turnings (for blast furnace use)	15.00 to 16.00
Machine shop turnings (for rolling mill use)	18.00 to 20.00
Cast borings (for blast furnace use)	15.00 to 16.00
Cast borings (clean)	20.00 to 22.00
No. 1 cast	28.00 to 30.00
Grate bars	20.00 to 22.00
Stove plate	20.00 to 22.00
Railroad malleable	32.50 to 35.00
Wrought iron and soft steel pipes and tubes (new specifications)	28.00 to 30.00

Cleveland

CLEVELAND, Nov. 6.

Iron Ore.—The sharp decline in the iron ore movement in October together with a falling off in September shipments has caused more or less anxiety among consumers as to whether enough ore will be brought down this season to supply their needs until the opening of navigation. It is the general belief that there will be enough ore to go around and that no consumer will suffer if an equable distribution of the supply can be made, but the railroad situation is making the proper distribution very difficult. Apparently, viewing the situation from the most favorable light, there will be scarcely a ton of ore more than is needed. However, the weather is going to be an important factor in the situation during the next few weeks. It is estimated that at least 6,000,000 tons of ore must be brought down during the remainder of the season and that to remove all doubts as to a sufficiency of supply all around, the movement should be from 8,000,000 to 9,000,000 tons. A November and December movement of 6,000,000 tons would bring the season's shipments slightly above 60,000,000 tons. There is little doubt that the movement during the remainder of the season will be at least 6,000,000 tons. Weather conditions, which were unusually bad during portions of October, have been better at the upper Lake ports during the past few days. In order to assure a more equable distribution of ore, the Sub-Committee on Pig Iron, Lake Ore and Transportation has recently curtailed ore shipments to Eastern and Lake front furnaces. Previously the regulations of this committee had applied only to interior furnaces. Iron ore shipments fell off 1,343,000 tons in October as compared with September and 922,000 tons as compared with October a year ago. The movement during October was 8,193,892 gross tons as compared with 9,536,152 gross tons in September, and 9,116,196 tons in October, 1916. Shipments for the season up to Nov. 1 were 54,253,598 tons, a decrease of 3,679,248 tons as compared with the same time last year, when the movement was 57,932,846 tons. We quote prices as follows, delivered lower Lake ports: Old range Bessemer, $5.95; old range non-Bessemer, $5.20; Mesaba Bessemer, $5.70; Mesaba non-Bessemer, $5.05.

Pig Iron.—The fixing of differentials on pig iron by the Government is expected to result in an increased volume of activity, as some buyers and sellers have been holding off waiting for the announcement of these differentials. Some business has been placed subject to the prices to be named in the differentials, and these orders will now be definitely entered at the Government price. It is expected that the Government differentials will result in strict adherence by producers to the different grades as specified. In the past, there has been irregularity in the classification by producers in the central West, probably a majority of sellers classing iron running 2 to 2.50 per cent in silicon as No. 2. Under the Government differentials, the foundry iron price is based on iron running 1.75 to 2.25 per cent in silicon which is designated as No. 2. Whether producers continue to sell iron under the old nomenclature of No. 1, No. 2, etc., or not, they will doubtless base the grade strictly on analyses embodied in the differentials, eliminating the former irregularities. There is considerable inquiry for foundry grades ranging from small lots up to 2000 tons. Most of these inquiries are for the first half delivery, although some consumers are in the market for prompt shipment iron, practically none of which is available. The Southern iron market is quiet, a few small lot sales being reported to consumers who are willing to pay the premium price over Southern grades. It has been generally understood that the base price of Ohio silvery iron for 8 per cent silicon would be $46, but in the Government differentials this has been reduced to $44.50. Several sales have been made at the $46 price, some during the past few days, but some of these sales, at least, were made subject to a price revision should a different price be named in the Government differentials. Steel-making iron is quiet, the only new inquiry being from the Southern Ohio territory for 1000 tons of basic iron for prompt shipment. We quote delivered Cleveland, as follows:

Bessemer	$37.25
Basic	33.30
Northern No. 2 foundry	33.30
Southern No. 2 foundry	37.00
Gray forge	32.30
Ohio silvery, 8 per cent silicon	46.12
Standard low phos., Valley furnace	50.00

Coke.—The coke situation continues very unsatisfactory. There is considerable inquiry for foundry coke both for prompt shipment and contracts, but no coke is being offered. It is pointed out that there is no inducement for makers to sell coke to the foundries when they can ship their entire output as furnace coke at the

same price. Some by-product coke is available, but makers are not offering it for sale for the reason that they do not know what price they are authorized to quote on it under the Government regulations.

Finished Iron and Steel.—There is still considerable inquiry for first quarter contracts, principally for steel bars, but mills have not yet opened their books, in most cases not yet knowing how much tonnage they will have to offer because of the heavy demands of the Government. The plate market continues to ease off, and 6c. Pittsburgh is now the maximum quotation for early shipment. There is considerable irregularity in plate prices, which range from 6c. Pittsburgh down to the Government price. An eastern mill is quoting universal plates at 3.25c. at mill, for delivery in this territory. A Cleveland mill that is making sales at higher than the Government price has succeeded in securing a limited quantity of slabs at $50 for rerolling into plates to fill a Government order at regular prices. There is an inquiry in the Cleveland market for about 20,000 tons of billets and bars for export. A Cleveland company is inquiring for 5000 tons of billets and bars and is understood to have been quoted $79 for forging billets, although some producers are asking as high as $105. An order has been placed for 900 tons of bars for airplane forgings. In structural work bids have been received for 440 tons for a new plant for the Standard Steel Castings Co., Cleveland. The demand for hard steel bars is light, and the general maximum quotation is 3.75c. at mill, although the market is not firm. The prices fixed by the Government on sheets appear to be generally satisfactory to producers. A great deal of inquiry is pending, and now that prices have been named it is expected that a large amount of business will be booked. The market has been active the past few days, considerable tonnage being sold at lower prices than have been prevailing. Jobbers have been unloading stocks as much as possible, and the prevailing prices have been 6c. for No. 28 black, 5c. for No. 10 blue annealed and 7c. for No. 28 galvanized. It is rumored that warehouse prices will be fixed by the Government this week. These prices are unchanged at 4.50c. for steel bars, 7c. for plates and 5c. for structural material.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is only moderate, but prices are fairly firm. The rivet market is quiet. Two Government inquiries for a few hundred tons are pending. As noted last week, quotations for Government orders are $5 to $7 lower than the regular prices, Government business being based on 2.90c. steel bars. Regular prices to the trade are unchanged at 5.25c., Pittsburgh, for structural and 5.35c. for boiler rivets. Bolt and nut discounts subject to further discount at 5 to 10 per cent for round lot orders are as follows:

Common carriage bolts, ¾ x 6 in., smaller or shorter, rolled thread, 35 off; cut thread, 30 and 5, larger or longer, 20. Machine bolts, with h. p. nuts, ⅝ x 4 in., smaller or shorter, rolled thread, 40; cut thread, 35; larger and longer, 25. Lag bolts, cone point, 40. Square h. p. nuts, blank, $1.90 off list; tapped, $1.70 off list. Hexagon, h. p. nuts, blank, $1.70 off; tapped, $1.50 off. C. p. c. and t. hexagon nuts, all sizes, blank, $1.25 off; tapped, $1 off. Cold pressed semi-finished hexagon nuts, 50 and 5 off.

Old Material.—The market is in an unsettled condition as a result of the Government regulation of prices on heavy melting steel, borings and turnings and railroad wrought. The maximum prices of the Government are higher than the present prices in the Cleveland market on the grades regulated except possibly railroad wrought, which declined during the week to close to the Government price. There is a general feeling that the Government regulation will have no effect on prices for the present, but that they will be regulated by the supply and demand, subject, of course, to the Government maximum prices. However, producers are expected to hold their scrap with the hope of getting the maximum prices, and some dealers fear they will suffer losses in covering short orders. The market has been quiet during the week, sales limited almost entirely to transactions between dealers. Heavy melting steel has sold at $27 to $27.75 and busheling at $22.25 to $23. We quote f.o.b. Cleveland as follows:

Per Gross Ton

Steel rails	$26.00 to $27.00
Steel rails, rerolling	36.00 to 37.00
Steel rails, under 3 ft.	30.00 to 31.00
Iron rails	35.00 to 36.00
Steel car axles	45.00 to 46.00
Heavy melting steel	27.00 to 28.00
Carwheels	26.50 to 27.50
Relaying rails, 50 lb. and over	50.00 to 60.00
Agricultural malleable	22.00 to 23.00
Railroad malleable	27.00 to 28.00
Steel axle turnings	21.00 to 22.00
Light bundled sheet scrap	20.00 to 20.50

Per Net Ton

Iron car axles	$44.00 to $45.00
Cast borings	16.75 to 17.25
Iron and steel turnings and drillings	16.00 to 16.75
No. 1 busheling	22.00 to 23.00
No. 1 railroad wrought	30.00 to 31.00
No. 1 cast	23.00 to 23.50
Railroad grate bars	16.00 to 17.00
Stove plate	16.00 to 17.00

Cincinnati

CINCINNATI, Nov. 6.—(*By Wire.*)

Pig Iron.—Definite information on the price differential question between grades of iron is received locally with a feeling of relief. A large percentage of contracts made in October is subject to revision, but the announcement has already tended to clear the atmosphere to a large extent. No appreciable effect has yet been noticed, but it is generally thought that contracting will be on a much larger scale and that buying for the first half will commence in earnest. The principal difficulty in the way of booking any large amount of business is the scarcity of iron, which is more marked in the southern Ohio district than elsewhere. Virginia makers also will probably not have a very large additional tonnage to offer in this territory, but to some extent this will be offset by foundry iron that can be obtained in the South from concerns which have refrained from selling heavily on account of the disturbed conditions and the uncertainty of the coke supply situation. One question that has been discussed and about which some doubt is yet expressed is whether furnaces in the South having a freight differential in their favor on Northern shipment are expected to observe the base price of $33 furnace, or, as heretofore, $33 Birmingham basis. The inquiry for foundry iron is very good. Melters seem more disposed to contract for their first half requirements, but in not many cases are they able to obtain the particular brand of iron generally used by them. Among the larger inquiries out is one from northern Ohio for 7500 tons of foundry iron for first half shipment. Others include lots of 100 to 1000 tons from southern Ohio and Indiana melters. A few cars of Ohio silvery were sold last week at $46 furnace, or $1.50 above the new schedule. Some Lake Superior charcoal has also been sold with the understanding that the government's prices were to rule. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton, we quote, f.o.b. Cincinnati, for 1917 shipment, prices as follows:

Southern coke, No. 2 foundry and 2 soft	$35.90
Southern Ohio coke, No. 2	34.26
Basic, Northern	34.26

(*By Mail*)

Coke.—The market is simply flooded with inquiries for foundry coke, some of which are for prompt shipment, and there is an intense interest taken in first half supplies by foundrymen who find they are running short for that delivery. Some furnace coke is also wanted, and if sales could be made by the different agencies, the tonnage that would change hands in a very short time would be surprisingly large. As far as can be ascertained, no coke of any kind is being sold at $6 per net ton at oven with the possible exception of a few cars of Connellsville foundry grades. Other producing districts are out of the running entirely as far as new business is concerned and are operating so as to take care of old contracts. It is rumored that some of these contracts, made before the $6 price was set, have been extended, but confirmation of this cannot be definitely obtained. It is generally thought that a change of attitude on the part of coke producers will have to be made at a very early date or there will be considerable suffering on the part

of foundrymen, due to the lack of fuel. Already a few in this territory have been compelled to borrow from their neighbors so as to keep their foundries running. To some extent this is due to the car shortage.

Finished Material.—Very few wire nails have been sold at the new jobber's price of $4.20 per keg base, but $4 has lately been done on a few scattered lots. Purchases of nails are much smaller than usual, and in some instances jobbers have been asked by retail merchants to fill their orders for such small quantities as two or three kegs at a time. Structural shapes are in a little better demand, and fairly prompt shipments can be made from warehouse stocks at 5.15c. Steel bars remain at 4.65c., and twist steel bars, 4.70c. Flat bars 2 x 1 in. and heavier and also rounds 3 in. in diameter and over are selling at 5c. Plates remain at 7c., with very light business reported. The store price on No. 10 blue annealed sheets is 8c. a lb., which is now considerably above the Pittsburgh mill quotation, and a further reduction is expected.

Old Material.—Conditions are still very quiet, and leading dealers are willing to let the market drag along until it automatically adjusts itself. No changes in quotations are made, but desirable business would undoubtedly be taken at a reduction from the regular quotations. Inbound scrap is about on the par with outbound shipments. Dealers are making no large purchases, and none seem inclined to add to their stocks just at the moment.

The following are dealers' prices, f.o.b. cars, southern Ohio and Cincinnati:

Per Gross Ton	
Bundled sheet scrap	$17.50 to $18.00
Old iron rails	32.00 to 32.50
Relaying rails, 50 lb. and up	44.00 to 44.50
Rerolling steel rails	33.00 to 33.50
Heavy melting steel scrap	24.00 to 24.50
Steel rails for melting	24.50 to 25.00
Old carwheels	25.00 to 25.50
Per Net Ton	
No. 1 railroad wrought	$27.50 to $28.00
Cast borings	12.00 to 12.50
Steel turnings	12.00 to 12.50
Railroad cast	18.50 to 19.00
No. 1 machinery cast	22.50 to 23.00
Burnt scrap	13.00 to 13.50
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	33.50 to 34.00
Pipes and flues	15.50 to 16.00
Malleable cast	19.00 to 19.50
Railroad tank and sheet	14.00 to 14.50

St. Louis

ST. LOUIS, Nov. 5.

Pig Iron.—The inquiries for pig iron continue very heavy and come from many points east, as well as from the St. Louis territory, but are productive of no business because none of the representatives is in position to close, nor will the furnaces accept contracts. One representative reports inquiries ranging from 100 to 4000 tons on his list, and aggregating probably 60,000 tons, all of which is likely to remain in the uncertain state for some time to come. The Commonwealth Steel Co. is in the market for 15,000 tons of Northern basic, but has so far been unable to make a deal therefor. The local furnace is practically sold up for the first half of the coming year, is disinclined to make contracts beyond that period and is therefore not available to the interests outside of the St. Louis territory which have been endeavoring to get iron here which they could not obtain elsewhere.

Coke.—The coke inquiries during the past week have been heavy from foundries in all parts of the St. Louis territory, but no contracts have eventuated because of the inability of representatives to accept any business. One Connellsville concern is reported as having made a price of $7 Connellsville for best selected 72-hour foundry coke through the year 1918, but has limited this to its old customers. The local by-product plant and the nearby producers of by-product coke continue out of the market and are making no quotations or sales.

Finished Iron and Steel.—Mill representatives continue to receive unsolicited orders in considerable quantity, but are filing them as there is no method by which they can put them in the shape of definite contracts with specific deliveries. No large contracts are being offered by regular customers, as they have settled down to the fact that they will be taken care of as best the mills can and are content to accept the situation. Some orders are getting consideration when they are for material which can be shipped out of accumulated mill stock, but such occurrences are rather rare. Movement out of warehouse continues up to capacity and in some classes of material beyond that point. For stock out of warehouse we quote as follows: Soft steel bars, 4.55c.; iron bars, 4.45c.; structural material, 5.05c.; tank plates, 7.05c.; No. 10 blue annealed sheets, 8.05c.; No. 28 black sheets, cold rolled, one pass, 8.55c.; No. 28 galvanized sheets, black sheet gage, 9.55c.

Old Material.—Scrap dealers acquired a buoyant feeling during the latter part of the week, only to lose it again as business opened this morning with notifications from customers having Government contracts that old material coming forward under existing contracts could not be accepted at the price. This was taken as meaning that prices would be abrogated in such cases and in consequence there would be much trouble ahead with possible losses on contracts running for months ahead at figures providing a good profit. Dealers were thrown into a state of extreme uncertainty with no way of determining what the next development would be. In some of the cases affected by the notifications referred to, thousands of tons of scrap are still due. This scrap has, to a large extent, been bought and is in some cases on the way to the mills. The result cannot be foretold at present, but the dealers are naturally extremely pessimistic at the moment. Car troubles are also prevalent, shippers being unable to obtain open cars, other than flats, and the customers, mostly utilizing magnets for unloading, unwilling to accept box cars. Flats boarded up are being used a little but are not satisfactory. Locally there has not been any buying of consequence during the past week, though there has been some demand for steel specialties, such as couplers, knuckles, steel springs, bolsters, etc. Relaying rails are unobtainable at any price. Rolling mill grades were advancing toward the close of the week, but these, like all the rest, were knocked in the head by to-day's developments. Lists appeared during the week from the Kansas City Southern; Nashville, Chattanooga and St. Louis; Minneapolis and St. Louis; Baltimore and Ohio; Northern Pacific, Union Pacific, Mobile and Ohio, Great Northern and the Pennsylvania, the tonnages being heavy and apparently induced by a feeling that the market was likely to drop. What the result of the refusal of mills to accept material at contract prices will be on these lists is not determinable at this writing. We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, with the reservation that conditions at the moment of sale govern the figures rather than the quotations now presented:

Per Gross Ton	
Old iron rails	$36.00 to $37.00
Old steel rails, re-rolling	36.00 to 36.50
Old steel rails, less than 3 feet	37.00 to 37.50
Relaying rails, standard section, subject to inspection	60.00 to 75.00
Old carwheels	28.00 to 28.50
No. 1 railroad heavy melting steel scrap	27.50 to 28.00
Heavy shoveling steel	25.50 to 26.00
Ordinary shoveling steel	24.00 to 24.50
Frogs, switches and guards cut apart	27.50 to 28.00
Ordinary bundled sheet scrap	18.00 to 18.50
Heavy axle and tire turnings	18.00 to 18.50
Per Net Ton	
Iron angle bars	$34.50 to $35.00
Steel angle bars	27.00 to 27.50
Iron car axles	43.00 to 43.50
Steel car axles	41.00 to 41.50
Wrought arch bars and transoms	42.00 to 42.50
No. 1 railroad wrought	30.00 to 31.00
No. 2 railroad wrought	28.00 to 28.50
Railroad springs	30.00 to 31.00
Steel couplers and knuckles	28.50 to 29.00
Locomotive tires, 42 in. and over, smooth inside	30.00 to 31.00
No. 1 dealers' forge	21.00 to 21.50
Cast iron borings	16.50 to 17.00
No. 1 busheling	23.00 to 23.50
No. 1 boilers, cut to sheets and rings	18.50 to 19.00
No. 1 railroad cast scrap	20.50 to 21.00
Stove plate and light cast scrap	17.00 to 17.50
Railroad malleable	25.50 to 26.00
Agricultural malleable	21.00 to 21.50
Pipes and flues	21.00 to 21.50
Heavy railroad sheet and tank scrap	18.50 to 19.00
Railroad grate bars	18.00 to 18.50
Machine shop turnings	16.50 to 17.00
Country mixed scrap	17.50 to 18.00

New York

NEW YORK, Nov. 7.

Pig Iron.—The interesting development in the pig iron market, showing the condition of the labor market, is the failure of an important company, having a large plant in New Jersey and contracts for castings with numerous concerns which it hoped to help in obtaining pig iron, to exercise an option for 10,000 tons of foundry grades of Eastern Pennsylvania iron for delivery through the remainder of this year and the first quarter of next year, the reason being that the company and the concerns with which it had contracts for castings were unable to obtain enough molders to keep the plants in full operation. The Singer Sewing Machine Co., which has been in the market for 5000 tons No. 1 foundry for the remainder of this year and the first half of next, has bought about 2000 tons and is still negotiating. The American Brake Shoe & Foundry Co. has sent out a new inquiry for 2000 tons of foundry grades. Some important interests report that they have very little iron to sell for delivery prior to July 1 of next year, this being true particularly of Virginia and Buffalo irons. In Buffalo coke shortage is causing considerable trouble. For early delivery we quote as follows, tidewater:

No. 1 X	$35.25
No. 2 X	34.25
No. 2 Plain	33.75
No. 2 Southern	37.25
No. 2 X Virginia	36.50 to 36.75

Ferroalloys.—The domestic ferromanganese market is quiet and the quotation for delivery this year or next ranges from $250 to $275, furnace. Sales of small lots have been made at $250, $260 and $275 per ton in the last week. Demand is not large. The 12,000-ton inquiry for 20 per cent spiegeleisen, which has been before the market for two weeks, has been awarded but details are lacking. The quotation for 1918 delivery is $65, furnace, with $70 asked for this year's material. A lot of 1000 tons of 16 to 20 per cent alloy for January-February delivery has been sold at about $72, delivered. Ferrosilicon, 50 per cent, is quiet and unchanged at last week's quotations.

Finished Iron and Steel.—Distribution in behalf of the Government among the country's mills has been active since the last report. For destroyers some 45,000 tons of plates have been distributed and for the Emergency Fleet Corporation 15,000 tons. It is now estimated that all of 1,500,000 tons of plates will be required each of the next two years for shipbuilding. The total production of sheared plates ¼ in. and over in thickness in 1916 was 2,453,150 gross tons. The large percentage which will thus be required for an industry which before the war made negligible demands is an indication of how scarce plates will be for business coming under the C classification of the Priority Committee of the War Industries Board. It is stated that 5000 cars are about to be distributed by the Government among 11 car-building companies for the expeditionary force in France. As yet definite conclusion has not been made of the 30,000 cars for Russia or of the 10,000 cars for the French railroads. Domestic road inquiries total some 6000 cars. New steel buying has generally been small in volume. Most of this has been for export on which higher than the fixed prices are asked, but exporters are finding it increasingly difficult to put through such business. In the fabricating field the American Bridge Co. has closed for 1900 tons for the New York Shipbuilding Co. and 1200 tons for repairing the Baltimore & Ohio pier recently burned at Baltimore. For a plant and angle shop at Hog Island for the American International Corporation some 2100 tons will be required. In bar iron more business at 4.50c., Pittsburgh business is noted and some easing is expected in bolts, nuts and spikes. So far as business in Eastern territory is concerned the steel bars range from 2.90c. to 4c., Pittsburgh; shapes are obtainable in two or three months at 3c., Pittsburgh, and tank plates are nominal at 3.25c., Pittsburgh. For mill shipments of iron bars we quote 4.695c. to 4.945c., New York. Out of store we continue to quote shapes and iron and steel bars at 5c. to 5.50c., New York, and plates at 8c. and higher, with a possibility that 7c. might be done. A 3 per cent transportation tax now applies.

Cast Iron Pipe.—The United States Government is in the market for 2750 tons of cast iron pipe ranging from 4 to 20 in. in size, and will receive bids Nov. 10 at Washington. The pipe is for export to France. The bidding will show to what extent makers are willing to make concessions. It is evident that the market is not very strong at the recently named prices of $56.50 on 6 in. and heavier and $59.50 on 4 in.

Old Material.—The old material market continued to drag awaiting developments from Washington and it is not yet clear what effect the price fixing at Washington will have. The limited buying of heavy melting steel by the Carnegie Steel Co. in the Pittsburgh district has not had any effect in this district. We quote prices of brokers as follows to New York producers and dealers, per gross ton, New York:

Heavy melting steel scrap, (for shipment to eastern Pennsylvania)	$24.00 to $24.50
Old steel rails (short lengths) or equivalent heavy steel scrap	24.00 to 25.00
Relaying rails	45.00 to 50.00
Rerolling rails	33.00 to 34.00
Iron and steel car axles	41.00 to 42.00
No. 1 railroad wrought	32.00 to 33.00
Wrought-iron track scrap	27.00 to 28.00
No. 1 yard wrought long	27.00 to 28.00
Light iron	7.00 to 8.00
Cast borings (clean)	16.00 to 17.00
Machine-shop turnings	14.00 to 15.00
Mixed borings and turnings	13.00 to 14.00
Wrought-iron pipe (1 in. minimum diameter, not under 2 ft. long)	25.00 to 26.00

Dealers in New York City and Brooklyn are quoting as follows to local foundries, per gross ton, but for delivery to cupola platforms of Brooklyn foundries, about $3 more is quoted:

No. 1 machinery cast	$25.00 to $26.00
No. 1 heavy cast (column, building materials, etc.)	21.00 to 22.00
No. 2 cast (radiators, cast boilers, etc.)	21.00 to 22.00
Stove plate	19.00 to 20.00
Locomotive grate bars	16.00 to 17.00
Malleable cast (railroad)	27.00 to 28.00
Old carwheels	27.00 to 28.00

Buffalo

BUFFALO, Nov. 5.

Pig Iron.—One of the larger producing interests of the district, that is now more actively in the market as a seller than other interests, having a greater available tonnage to dispose of, has sold approximately 10,000 tons during the week, the bulk of it being foundry iron, at $33 per ton at furnace. Melters are manifesting a lively interest in the securing of tonnage to cover their first quarter and first half needs, and there is plenty of inquiry, with indications that it will keep up in good volume for a considerable period ahead. Most furnaces are only able to care for old customer trade, and current sales are almost entirely for 1918 delivery, there being very little tonnage left that is available for delivery this year. The outlook is that there will be a heavy tonnage of iron booked for first half 1918 delivery within a very short period. Prices range at approximately the same level as a week ago, and we continue the same schedule as reported last week, which is as follows for the various grades, f.o.b. furnace Buffalo:

No. 1 foundry	$34.50
No. 2 X	33.50
No. 3 foundry	32.50
Gray forge	32.00
Malleable	33.50
Basic	33.00
Lake Superior charcoal, f.o.b. Buffalo	39.75

Old Material.—Large sales of heavy melting steel are reported, and inquiries for considerable tonnages of this grade of scrap continue to be received, giving a much stronger tone to the market than was noted last week. This commodity is now commanding $27.50 to $29 per ton, as against $27 to $28 last week.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

(Some of these quotations are nominal, showing prices which prevailed when last sales were made. Published as a matter of record.)

Freight rates from Pittsburgh on iron and steel articles, aside from wrought iron and steel pipe in carloads, per 100 lb. New York 19.5c.; Philadelphia 18.5c.; Boston 21.5c.; Buffalo 11.6c.; Cleveland 13.5c.; Cincinnati 18.5c.; Indianapolis 20c.; Chicago 21.5c.; St. Louis 27c.; Kansas City 47c.; minimum carload 36,000 lb.; St. Paul 35.5c.; minimum carload 36,000 lb.; Denver 79c.; minimum carload 36,000 lb.; Omaha 47c.; minimum carload 36,000 lb.; New Orleans 30.7c.; Birmingham 46c.; Pacific Coast 75c.; minimum carload 80,000 lb. To the Pacific Coast, the rate on steel bars and structural steel is 90c.; minimum carload 40,000 lb. and 85c.; minimum carload 50,000 lb. On wrought iron and steel pipe, the rate from Pittsburgh to Kansas City is 40c. per 100 lb., minimum carload 46,000 lb.; to Omaha 40c., minimum carload 46,000 lb.; to St. Paul 35.5c., minimum carload 46,000 lb.; Denver 79c., minimum carload 46,000 lb. *A 3 per cent transportation tax now applies.*

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in., angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees 3 in. and over, 3c.

Wire Products

(Prices, except on annealed fence wire, not announced, but figured to correspond with the price of $3.25 on annealed fence wire as announced at Washington.)

Wire nails, $3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails, taking an advance over this price of $2, and shorter than 1 in., $2.50. Bright basic wire, $3.45 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25; galvanized wire, $3.95; galvanized barb wire, and fence staples, $4.35; painted barb wire, $3.65; polished fence staples, $3.85; cement-coated nails, $3.40 base, these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net less 2 per cent off for cash in 10 days.

Nuts and Bolts

Discounts in effect for large buyers are as follows, delivered in lots of 300 lb. or more, when the actual freight rate does not exceed 20c. per 100 lb., terms 30 days net, or 1 per cent for cash in 10 days.

Carriage bolts, small, rolled thread, 40 per cent; small cut thread, 35 and 2½ per cent; large, 25 per cent.

Machine bolts, h. p. nuts small, rolled thread, 40 and 10 per cent; small, cut thread, 40 per cent; large, 30 per cent.

Machine bolts, c. p. c. and t. nuts, small, 30 per cent; large, 20 per cent. Bolt ends, h. p. nuts, 30 per cent with c. p. nuts 20 per cent. Lag screws (cone or gimlet point), 45 per cent.

Nuts, h. p. sq. blank, $1.70 off list, and tapped, $1.50 off; hex. blank, $1.50 off, and tapped, $1.30 off; nuts, c. p. c. and t. sq. blank, $1.25 off; and tapped, $1 off; hex. blank, $1.25 off, and tapped, $1 off. Semi-finished hex. nuts, 50 and 10 per cent. Finished and case-hardened nuts 50 and 10 per cent.

Rivets 7/16 in. in diameter and smaller, 40 per cent.

Wire Rods

Soft Bessemer and open-hearth rods to domestic consumers at $57; high-carbon rods made from ordinary open-hearth steel, $95 to $100, and special steel rods with carbons running from 0.40 to 0.60, $100 to $110 at mill; above 0.60 carbon, $115 to $120.

Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. and larger, $5 to $5.50; ¾ in., 7/16 in. and ½ in., $7.00 base. Boat spikes are occasionally quoted $7 to $8, all per 100 lb., f.o.b. Pittsburgh, but some makers are quoting higher. Track bolts with square nuts, 7c. to 7.50c. to railroads, and 8c. to 8.50c. in small lots for fairly prompt shipment.

Steel Rails

Angle bars at 3.50c. to 3.75c. at mill, when sold in connection with orders for standard section rails and on carload and smaller lots, 4c. to 4.25c. at mill. Light rails, 25 to 45 lb., $75 to $80; 16 to 20 lb., $80 to $81; 12 and 14 lb., $82 to $83; 8 and 10 lb., $83 to $84; in carload lots, f.o.b. mill, with usual extras for less than carloads. Standard Bessemer rails, $38; open hearth, $40 per gross ton, Pittsburgh.

Terne Plate

Effective July 31, prices on all sizes of terne plates were advanced from $2 to $2.50 per package and are now as follows: 8-lb. coating, 200 lb., $16 per package; 8-lb. coating, I. C., $16.20; 12-lb. coating, I. C., $17.50; 15-lb. coating, I. C., $18.25; 20-lb., coating, I. C., $19; 25-lb. coating, I. C., $20; 30-lb. coating, I. C., $21; 35-lb. coating, I. C., $22; 40-lb. coating, I. C., $23 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. for delivery late this year, and 4.50c. to 5c. from warehouse, in small lots for prompt shipment. Refined iron bars, 4.75c., railroad test bars, 5.25c. in carload and larger lots f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	44	17½	⅛ and ¼	23	+4
½	48	33½	⅜	24	+3
¾ to 3	51	37½	½	28	10
			¾ to 1½	33	17

Lap Weld

2	44	31½	2	26	12
2½ to 6	47	34½	2½ to 6	8	15
7 to 12	44	30½	7 to 12	25	12
13 and 14	34½	..			
15	32	..			

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	40	22½	⅛, ¼ and ⅜	22	5
½	45	32½	½	27	14
¾ to 1½	49	36½	¾ to 1½	33	18
2 to 3	50	37½			

Lap Weld, extra strong, plain ends

2	42	30½	2	27	14
2½ to 4	45	33½	2½ to 4	29	17
4 to 6	44	32½	4½ to 6	28	16
7 to 8	40	26½	7 to 8	20	8
9 to 12	35	21½	9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

Nominal discounts on less than carload lots, freight added to point of delivery, effective from Nov. 1, 1916, on standard charcoal iron tubes and from April 2, 1917, on lap-welded steel tubes are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.	31	1½ in.	23
2¼ in.	28	1¾ and 2 in.	35
2½ and 2¾ in.	34	2¼ in.	32
3 and 3¼ in.	34	2½ and 2¾ in.	38
3½ to 4½ in.	34	3 and 3½ in.	43
5 and 6 in.	33	3½ to 4½ in.	No quotations
7 to 13 in.	30	5 and 6 in.	37
		7 to 13 in.	34

Above discounts apply to standard gages and to even gages not more than four gages heavier than standard in standard lengths. Locomotive and steamship special charcoal grades bring higher prices.

1¾ in., over 18 ft., and not exceeding 22 ft., 10 per cent net extra.

2 in. and larger, over 22 ft., 10 per cent net extra.

Sheets

Makers' prices for mill shipments on sheets of United States standard gage, in carload and larger lots, are as follows, 30 days net or 2 per cent discount in 10 days:

[Open-hearth stock, $5 per ton above these prices.]

Blue Annealed—Bessemer

	Cents per lb.
Nos. 3 to 8	4.00
Nos. 9 and 10	4.25
Nos. 11 and 12	5.00
Nos. 13 and 14	4.75
Nos. 15 and 16	5.00

Box Annealed, One Pass Cold Rolled—Bessemer

Nos. 17 to 21	4.80
Nos. 22 and 24	4.85
Nos. 25 and 26	4.90
No. 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.15

Galvanized Black Sheet Gage—Bessemer

Nos. 10 and 11	5.25
Nos. 12 and 14	5.35
Nos. 15 and 16	5.50
Nos. 17 to 21	5.65
Nos. 22 and 24	5.80
Nos. 25 and 26	5.95
No. 27	6.10
No. 28	6.25
No. 29	6.50
No. 30	6.75

Tin-Mill Black Plate—Bessemer

Nos. 15 and 16	4.80
Nos. 17 to 21	4.85
Nos. 22 to 24	4.90
Nos. 25 and 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.05
Nos. 30½ and 31	5.10

Metal Markets

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin,	Lead		Spelter	
		Electro-	New	New	St.	New	St.
Oct.	Lake	lytic	York	York	Louis	York	Louis
31	23.50	23.50	66.00	6.00	5.87½	8.00	7.75
Nov.							
1	23.50	23.50	66.00	6.12½	6.00	8.00	7.75
2	23.50	23.50	66.00	6.12½	6.00	7.87½	7.62½
3	23.50	23.50	....	6.25	6.12½	7.87½	7.62½
5	23.50	23.50	68.00	6.25	6.12½	7.87½	7.62½

NEW YORK, Nov. 7.

The markets are generally quiet. Copper continues unchanged and nominal at the Government price. Tin is scarce and higher. Lead is quiet but very strong. Spelter is dull and lower. Antimony has again declined nominally.

New York

Copper.—We continue to quote the Government price of 23.50c. for both Lake and electrolytic copper as nominal. No metal is obtainable at this price in large quantities for early delivery. The Copper Producers' Committee controls the situation absolutely, and official information is unobtainable. The jobbers' position and that of the small consumer continue chaotic, but copper in small lots is being sold at above the Government price. Such jobbers' stocks, however, are growing smaller, and replenishing them at any price is almost impossible. The London market continues dull and unchanged at £125 per ton for spot electrolytic and £121 for futures.

Copper Averages.—In the absence of any sales of Lake or electrolytic copper at the Government or any other price in quantities sufficient to establish a market, there is no monthly average based on quotations in THE IRON AGE possible. The Government price of 23.50c. has been quoted regularly as nominal.

Tin.—The acute shortage in spot tin continues the controlling factor. The market is strong and higher, a small lot of spot having been sold at 68c., New York, on Monday. Tin for this position is practically unobtainable, and the small consumers placed in a tight corner. A buyer desiring 15 tons late last week could not obtain it. There were moderate sales of future tin on Monday. In a quiet way on Oct. 31 and Nov. 1 and 2, considerable metal of all grades was disposed of, mostly for future shipment, but these were not made public. The permit situation is unrelieved, and the future of the spot buyer is uncertain. Arrivals up to Nov. 2 inclusive were 160 tons, with 4300 tons afloat. The London market continues to advance, spot Straits having been quoted on Nov. 3 at £260 10s., an increase of £4 in the week.

Lead.—The market continues to display much strength. Demand is active, and prices have risen almost daily until on Monday the quotation in the outside market was 6.25c., New York, or 6.12½c., St. Louis, for early delivery. The American Smelting & Refining Co. also advanced its price on Monday ½c. per lb., to 6c., New York. There is, however, very little metal available from either source. The leading producer has not been a free seller in the last few days, even restricting its customers' purchases. A higher market is looked for. Buyers desire to purchase but sellers are scarce. It is estimated that in the large buying movement a week ago not far from 20,000 tons were sold, including large amounts for Canada and France.

Spelter.—The market is still stagnant and weak. Demand from the usual large consuming sources shows no sign of revival. Consumption is still considerably behind production, though lower prices are continually forcing certain producers to close down. Small lots have sold as low as 7.50c., St. Louis, with others at 7.75c. The latter quotation is steadily adhered to by some producers. The quotation for prime Western is more or less nominal at 7.62½c., St. Louis, or 7.87½c., New York, for early delivery.

Antimony.—Quotations for Chinese and Japanese grades are unchanged at 14.25c., New York, duty paid. The market is dead.

Aluminum.—Demand for aluminum is not even fair. No. 1 virgin metal, 98 to 99 per cent pure, is nominally quoted at 36c. to 38c., New York.

Old Metals.—The market is unsettled. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible (nominal)	23.50
Copper, heavy and wire (nominal)	23.50
Copper light and bottoms	21.00 to 21.50
Brass, heavy	18.00 to 18.25
Brass, light	12.00 to 12.25
Heavy machine composition	24.50 to 25.50
No. 1 yellow rod brass turnings	16.00 to 17.00
No. 1 red brass or composition turnings	19.00 to 20.50
Lead, heavy	5.25
Lead, tea	4.25
Zinc	6.25

Chicago

Nov. 5.—Considerable copper is being sold by second hands at prices ranging from 28c. upward. Some of the resellers are manufacturers who have a surplus and believe they can safely take a profit now and replenish their supply early next year at 23.50c. If their judgment fails, they may find themselves in a tight place, as has happened before. In lead there was active buying around 5.45c., the principal producer taking practically all of the business for the reason that the independents did not meet its price. Subsequently the big producer advanced its quotation to 5.95c. and the business tapered off. Tin has been active, and now stands at 68c., with much higher prices predicted. Its future, however, is admittedly fraught with uncertainty, and buying for any purpose, save immediate need, is a gamble. Spelter is inactive. Old metals are quiet. We quote as follows: Casting, Lake and electrolytic copper, 28c. to 30c.; tin, carloads, 68c.; small lots, 70c.; lead, 5.95c.; spelter, 7.50c. to 7.62½c.; sheet zinc, 19c.; antimony, 16c. to 17.50c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible wire, crucible shapes, 20c.; copper clips, 20c.; copper bottoms, 19c.; red brass, 19c.; yellow brass, 14.50c.; lead pipe, 4.50c.; zinc, 5c.; pewter, No. 1, 35c.; tinfoil, 42c.; block tin, 47c.

St. Louis

Nov. 5.—In the nonferrous metals market lead, which weakened during the earlier part of the week, regained a little strength toward the end and to-day closed at 6.12½c. in carload lots; spelter was a little less strong and in carload lots the close to-day was at 7.50c. to 7.62½c. In less than carload lots the closing figures to-day were: Lead, 6.75c.; spelter, 8.50c.; tin, 73c.; copper nominal, with reselling prices around 27.50c.; Asiatic antimony, 18c. In the Joplin district there was a decidedly weaker feeling in zinc blende, with the range from $57.50 to $72.50, basis of 60 per cent metal. The interest which had been holding the top figure up to $75 shortened the price to the top range, but took only the very best ores at that price. The average for the week for the district was $65 per ton. Calamine ranged from $33 to $37 per ton, basis of 40 per cent metal, while the average for the week for the district was $35 per ton. Lead showed extreme weakness early in the week, selling as low as $60 per ton, but recovered to $65, which is still $15 per ton below the price of two weeks ago. The average for the week for the district, basis of 80 per cent metal, was $65. On miscellaneous scrap metals we quote dealers' buying prices as follows, some changes being noted: Light brass, 11c.; heavy yellow brass, 15c.; heavy red brass and light copper, 19c.; heavy copper and copper wire, 21.50c.; pewter, 25c.; tinfoil, 42c.; zinc, 5c.; tea lead, 5c.; lead, 5.50c.

Late last week four blast furnaces in the Youngstown, Ohio, district were banked owing to the shortage of coke. Three stacks at the Ohio works of the Carnegie Steel Co. were idle, and one of the Hubbard furnaces at the Youngstown & Tube Co. Niles stack of the Carnegie Steel Co., at Niles, Ohio, is also banked for lack of coke.

IRON AND INDUSTRIAL STOCKS

Last Week's Slump—More Liberty Bonds—An Important Conference

NEW YORK, Nov. 6.

The remarkable slump in stocks last week is generally attributed to short selling to a large extent, but it is recognized that Government demands for money continue to have a depressing effect on the market. Steel common reached the extremely low point of 93¼ on Thursday. This stock first sold on the curb March 26, 1901, at 38, and rapidly advanced to 55. Following the depression of 1904 and the liquidation that resulted, it dropped to 8⅜, and not until 1908 did it sell above the high record of 55, established in 1901. On Oct. 4, 1909, it sold at 94⅞, and that record stood until September, 1916, when for the first time in its history it crossed par. Following the outbreak of the European war, when the Stock Exchange was closed, Steel common sold on the New Street market Oct. 24, 1914, at 38½. On May 31, 1917, the high record of 136⅝ was established. The stock remained above par until last week, when on Thursday it dropped 93½, but made a good gain later in the week. Gains were also recorded on numerous other stocks. An important feature of the week was that in spite of the low prices prevailing there was at no time a panicky condition.

Among the stocks which recorded losses for the week were the following: American Car & Foundry, 5¾; American Locomotive, com., 9; American Steel Foundries, 6½; Baldwin Locomotive, com., 8¾; Bethlehem Steel, com., 8; Bethlehem Steel, class B, 8; Bethlehem Steel, pref., 2; Colorado Fuel & Iron, 6½; Crucible Steel, 11¾; Gulf States Steel, 12; Lackawanna Steel, 7½; Midvale Steel, 3½; National Acme, 3½; National Enameling & Stamping, 4⅜; Pressed Steel Car, 3; Republic Iron & Steel, 8½; Superior Steel, 6⅜; United States Cast Iron Pipe & Foundry, 1⅞; United States Steel, com., 11¼; United States Steel, pref., 2.

The range of prices on active iron and industrial stocks from Wednesday of last week to Monday of this week was as follows:

Allis-Chal. com..	15½- 19⅞	Int. Har. of N. J. com	101¼-104
Allis-Chal. pf....	69⅞- 71	Int. Har. of N. J. pf.	110
Am. Can com....	30 - 39⅞	Int. Har. Corp. com.	54 - 57½
Am. Can pf.....	93 - 96	Lacka. Steel	68 - 77
Am. Car & Fdry. com.	58 - 63½	Lake Sup. Corp.	10¼- 12⅜
Am. Car & Fdry. pf.	106 -107¼	Midvale Steel ..	40½- 43⅜
Am. Loco. com.	47½- 55	Nat.-Acme.	26½- 27⅞
Am. Loco. pf....	94⅝- 97¾	Nat. En. & Stm. com.	31 - 36⅞
Am. Radi. com..	280 -292	N. Y. Air Brake.	98 -105
Am. Ship. com..	83¾- 91	Nova Scotia St..	74 - 79
Am. Steel Fdries.	52 - 57⅞	Pr. Steel com...	50 - 55
Bald. Loco. com.	50 - 58¼	Pr. Steel pf.....	90
Bald. Loco. pf..	94¼- 94⅝	Ry. St. Spring com.	36½- 40
Beth. Steel com.	74 - 79	Republic com. ..	68½- 75
Beth. St., Class B.	73 - 80	Republic pf.	96½- 97
Beth. Steel pf.....	90	Sloss com	33⅝- 37½
Cambria Steel	115	Superior Steel ..	30¼- 34
Case (J. I.) pf.....	80	Superior St. 1st pf.....	98
Cent. Fdry. com.....	27	Un. Alloy St. 1st pf.	37¾- 40
Cent. Fdry. pf.....	36	U. S. Pipe com.	10 - 12⅝
Charcoal Iron com....	5½	U. S. Pipe pf...	48½- 49
Chic. Pneu. Tool.	40 - 51	U. S. Steel com.	90⅞-101⅞
Colo. Fuel	30½- 35⅝	U. S. Steel pf..	109⅝-113
Crucible St. com.	51½- 63	Va. I. C. & Coke.	50 - 55
Crucible St. pf..	89½- 90½	Warwick	7¾
Deere & Co. pf..	99½- 99⅝	West. Elec.	36⅛- 41⅝
Gen. Electric ...	124⅞-130		
Gt. No. Ore. Cert.	22⅝- 26⅝		
Gulf St. Steel ...	80 - 90		
Gulf St. Steel 1st pf.	101⅞		

Dividends

The American Radiator Co., quarterly, 3 per cent on the common, payable Dec. 31, and 1¾ per cent on the preferred, payable Nov. 15.

Deere & Co., quarterly, 1¾ per cent on the preferred, payable Dec. 1.

The Eastern Steel Co., quarterly 2½ per cent on the common, payable Jan. 15, extra 5 per cent, payable Dec. 1, and quarterly, 1¾ per cent on the first and second preferred, payable Dec. 15.

The Inland Steel Co., quarterly, 2 per cent, payable Dec. 2.

The International Harvester Co., of New Jersey, quarterly, 1¾ per cent on the preferred, payable Dec. 1.

The International Harvester Corporation, quarterly, 1¾ per cent on the preferred, payable Dec. 1.

The Penn-Seaboard Steel Corporation, quarterly, $1 per share, payable Nov. 1.

The Savage Arms Corporation, quarterly, 1½ per cent on the common, 1¾ per cent on the first preferred, and 1½ per cent on the second preferred, all payable Dec. 15.

OBITUARY

JOSHUA HORROCKS, one of the first manufacturers of poultry wire fencing in the United States, died at his home in Brooklyn, N. Y., Nov. 5, aged 77 years. He was born at Manchester, England, and learned the trade of forming useful articles from wire there. At the age of 28 he emigrated to California, where he first made poultry wire. He subsequently moved to Chicago, and when his plant was destroyed in the fire of 1871 came to New York. For many years he was located at 111 Fulton Street, removing later to the present factory at Brooklyn, N. Y. In 1898, following a stroke of paralysis, the business was incorporated with one son, Edward E., as president and another, Frederick H., as treasurer. Although Mr. Horrocks had been confined to his room for the last seven years, his death was caused by pneumonia. He invented the steel door mat. He left a widow, three sons and one daughter.

JOSEPH DAIN, SR., a prominent member of the Deere & Co. organization, and a resident of Moline, Ill., since 1912, died Nov. 1 at the Eietel Hospital, Minneapolis, Minn. He was taken ill on Oct. 29 while on a business trip through the Northwest. Throughout the farm implement world Mr. Dain was widely known as an inventor and manufacturer. He was especially interested in the development of haying tools. He was president of the Dain Mfg. Co., vice-president and director of Deere & Co., and a director in several of the Deere subsidiary concerns. Last month he retired as president of the National Implement and Vehicle Association. He presided over the sessions of that organization at its convention in Chicago, Oct. 17 to 19.

N. V. SACHS, for 10 years connected with the James H. Mathews Co., steel stamp and stencil manufacturer, Pittsburgh, died Oct. 21. He was manager of the bronze department and previous to that manager of the advertising department. At one time he was connected with the Stephen T. Williams Co., New York.

HAL H. HILL, for about 20 years Cleveland representative of the Erie City Iron Works, Erie, Pa., and the C. & G. Cooper Co., Mt. Vernon, Ohio, died at his country home in Wickliffe, Ohio, Oct. 28, after a three years' illness.

LOUIS F. ZOLINGER, Columbia, Pa., a pioneer iron worker, died Oct. 2, at the age of 78. He was connected with the old Central Iron Co., South Harrisburg, and later the Susquehanna Iron & Steel Co., until its failure.

Machine Shop for Washington Navy Yard Gun Plant

WASHINGTON, Nov. 6.—Bids were opened at the Bureau of Yards and Docks of the Navy Department yesterday for a large six-story machine shop for the great gun plant at the Washington Navy Yard to be used in the manufacture of guns, mounts, torpedoes and miscellaneous ordnance supplies. The building, which will be the largest of its kind ever built by the Government, is to be 502 ft. 6 in. long, 162 ft. 6 in. wide and 85 ft. 6 in. high, with reinforced concrete foundations, structural steel frame, crane girders and monorails, concrete incased steel columns and girders, reinforced concrete floors, gypsum roof, with concrete window sills, brick exterior spandrel walls, concrete cornice and belt course, terra cotta interior partition and court walls, with stucco or plaster finish; plumbing, heating, ventilating appliances, electric lighting, electric elevators, etc.

Warren Moore & Co., Philadelphia, who bid $1,048,000 with 180 days for completion time, appear to be the lowest general bidder on all points. Congress appropriated $7,500,000 for the extension and equipment of the gun plant at the Washington yard, but plans for the expending of the remainder of this large sum have not yet been perfected.

PERSONAL

J. G. Deericks has been made general manager of sales of the Pittsburgh Steel Co., Union Arcade Bldg., Pittsburgh, succeeding Edmund Steytler, who died at Atlantic City, Oct. 8. He has been identified with the steel trade in various capacities. He went to New York some years ago and was in the sales department of the American Steel Hoop Co. when that concern and the National Steel Co. moved their offices from New York to Pittsburgh, both companies later being absorbed by the Carnegie Steel Co., Mr. Deericks then going in the sales department of that concern. Later he went with the American Steel & Wire Co., in its New York offices, and had charge of sales of its wire products to manufacturers in the Eastern district. In April this year he left the American Steel & Wire Co. to accept the position of assistant general manager of sales of the Pittsburgh Steel Co. He was born in Cleveland in 1871. He is a member of the American Iron and Steel Institute, the Engineers Club of New York, the Ohio Society of New York and the Pittsburgh Athletic Association.

John Hunter, chief engineer for the Union Electric Light & Power Company at St. Louis, has been appointed by the United States Government to aid in directing the construction of the American marine fleet, with especial charge of shipbuilding operations on the Passaic River in New Jersey.

Vaughan E. Montgomery, formerly in the sales department, Cincinnati office of Crocker Bros., is now at Chillicothe, Ohio, with the machine gun company of the 330th Regiment. He was recently promoted from private to sergeant and was also appointed special instructor in English for his company.

Norman B. Hickox has been appointed sales and advertising manager of the National X-Ray Reflector Co., Chicago. E. H. Cameron, formerly sales manager, has severed his connection with the company and is now located in Seattle. Hugh D. Butler, formerly manager Chicago sales, has been appointed assistant sales manager. Guy R. Hastings, formerly assistant manager Chicago sales, has been appointed manager Chicago sales. George D. Bryson has been appointed assistant advertising manager.

G. W. Wesley, formerly vice-president of the General Vehicle Co., Long Island City, N. Y., has become connected with the Simplex Automobile Co., New Brunswick, N. J.

C. A. Bachelder, general purchasing agent for the Holt Mfg. Co., San Francisco, builder of traction engines, is in the East on a month's trip.

James I. Stephenson, president Cincinnati Iron & Steel Co., Cincinnati, was largely responsible in influencing the American Iron & Steel Institute to hold its fall meeting in Cincinnati. He was chairman of the local committee that arranged the entertainment program, and since the convention last month he has received a large number of letters from members who attended, congratulating his committee on the successful manner in which the entertainment features were carried out.

Previous to his connection with his present company Mr. Stephenson was for a numbers of years assistant manager of sales of the Carnegie Steel Co., at Cincinnati.

Walter C. Voss, formerly in charge of the Detroit office of the rim and tube division of this company, is to be transferred to Washington to look after the business of the Standard Parts Co. Mr. Voss is being replaced by Art A. Loeffler, formerly of the Jackson-Church-Wilcox Co., Saginaw, Mich.

Charles P. Bannon, formerly sales manager of the Best Steel Casting Co., San Francisco, has given up that position in order to take a needed rest.

Charles C. Capehart, superintendent of the bar mill of the Pittsburgh Crucible Steel Co. at the Midland, Pa., plant, has been promoted to chief inspector, succeeding J. N. Critchlow, who resigned to accept a similar position with the United Alloys Corporation, Canton, Ohio. M. E. Harty, efficiency expert, has been assigned to the superintendency of the bar mill. E. T. Gants has been appointed steam and hydraulic engineer.

Harry L. Horning, vice-president and general manager Waukesha Motor Co., Waukesha, Wis., and chairman of the motor products section, War Industries Board, was the guest of honor at the weekly luncheon of the City Club of Milwaukee on Saturday, Nov. 3, and discussed the remarkable achievement of American automotive engineers in producing the new military truck in record-breaking time.

L. E. Dunhan, who has been connected with the iron ore department of M. A. Hanna & Co., Cleveland, for a number of years, has been appointed as director of purchases for the various interests with which the Hanna firm is connected as agent. The present purchasing agents and offices in Cleveland, Duluth, Minn., and Wilkes-Barre, Pa., will be maintained as heretofore.

Ambrose Monell, president International Nickel Co., has been commissioned a colonel in the U. S. Signal Corps, aviation section.

F. E. Nulsen, president Missouri Malleable Iron Co., East St. Louis, Ill., who at the recent Cincinnati meeting of the American Iron and Steel Institute discussed the paper by Henry F. Pope, president of the National Malleable Castings Co., Cleveland, on Malleable Iron and Its Uses, has long been a prominent figure not only in the malleable business in St. Louis and vicinity but in the National councils of the manufacturers of malleables. His valuable paper will be found elsewhere in this issue.

Stanton Griffith, for fifteen years superintendent of the foundry, pattern shop and chemical laboratory of the Eclipse works of the Fairbanks-Morse Mfg. Co., Beloit, Wis., resigned Nov. 1 to accept the position of works manager of the South Side Foundry & Machine Co., Charleston, W. Va. Mr. Griffith's first employment as a youth was in the plant to which he now returns as works manager.

Oscar Stegeman, president and general manager Stegeman Motor Car Co., Milwaukee, has resigned and will make new connections.

Charles G. Crocker, general manager Oscillating Sleigh Co., Menomonie, Wis., has resigned to accept the position of works manager of the United States Switch Co., organized recently at Eau Claire, Wis., and now manufacturing automatic railroad and street car switches and signals. Mr. Crocker formerly was factory superintendent of the McDonough Mfg. Co., Eau Claire.

Alfred Marshall, Marshall & Huschart Machinery Co., Chicago, has returned after an absence of about six months, during which time he was a member of an expedition sent by the Carnegie Institute and National Geographical Society to the Ungava Peninsula. Mr. Marshall accompanied the party as an ornithologist.

F. D. Egan, formerly steam and electrical engineer at the Midland, Pa., works of the Pittsburgh Crucible Steel Co., has resigned, effective Nov. 1, to accept the position of works manager of the Pittsburgh Iron &

Steel Foundries Co., of Pittsburgh, works at Midland, Pa. Clyde Brooks, formerly works manager, will now give his entire time to the positions of secretary and general sales manager of the company.

H. W. Graham has resigned as mechanical engineer of the Herman Pneumatic Tool Co., Zelienople, Pa., to become chief engineer of the Ocala Iron Works, Ocala, Fla.

ABROGATION OF CONTRACTS

Views of Producers and Consumers in Various Iron and Steel Lines

THE abrogation of contracts as a possibility under new Federal legislation at the next session of Congress has lately been made a subject of special consideration through the inquiry sent widely to the iron and steel trade by the Federal Trade Commission. The consensus of opinion thus obtained will form a basis, it is presumed, for stipulations of the proposed Pomerene steel and iron price fixing bill. Such a measure, it will be recalled, was to be made an early feature when Congress meets in December. Meanwhile, supplementing its editorial in the last issue, THE IRON AGE has been sounding out the views of various classes of manufacturers of iron and steel products, including particularly those likely to have more at stake in material purchase contracts than in contracts covering products of their own manufacture. Of forty cases, comprising small as well as large manufacturers, two alone indicated a willingness that contracts should be nullified, but with qualifications.

Abrogation With Qualifications.

For example, a maker of rolling mill machinery, intimating an inability to buy for prompt or future shipments on commodities "where the prohibitive profit has been eliminated by the Government," hopes "that the true American spirit will soon be shown that will allow the Government to proceed with their plans, which necessarily should abrogate all contracts, placing same on a fair profit basis, making a uniform standard of prices so that everybody can get busy and do their part."

A builder of industrial plants believes "that if the enforcement of an existing contract for steel at a rate considerably higher than the fixed price will work a hardship on the buyer and penalize him unduly, as compared with a competitor who buys at Government prices, this should have consideration, providing, however, that the Government's fixed price allows the steel men a good profit."

A maker of bolts and nuts says that "as far as our readjustment in price is concerned, when we make it, we will voluntarily reduce every contract on our books, changing the contract to the price announced."

A maker of plumbers' supplies thinks that "whereas it is proper that the mill should expect the quantity to be taken out on the contract, the price should be reduced to the Government standard, although so far the mills do not seem to be disposed to meet these new figures."

Against Abrogation.

The views against contract abrogation may be summarized by the following quotations:

A maker of steel castings: The abrogation of contracts would be a fatal mistake. Endless confusion and months of readjustment would ensue. Presumably, manufacturers, when they sold their product, covered themselves on the materials required, and as soon as existing contracts are thus worked out, then the whole industry comes down automatically to a common plane operating under the fixed prices established.

A maker of forgings: We strongly urge against a move of this kind. To our minds it would establish a precedent, fraught with danger, far reaching in its effects, not only to manufacturers in their relations, one with another, but with labor as well. The keeping of contracts inviolate has been a matter of honor between contracting parties, whether concerning men or industries, and we cannot conceive of any emergency great enough to change a system so honorable.

A maker of shearing, punching and other heavy machinery: We cannot conceive of a state of affairs that would warrant such a brazen defiance of business ethics and common honesty. The U. S. Government being, at the present time, the greatest of all borrowers, is living in a glass house, and can ill afford to father an act that savors of repudiation in any form.

A manufacturer of heating and ventilating equipment: It is out of the question for the mills to accept new business at the fixed prices for private consumers except for delivery after the period for which they are sold up, and we believe that the abrogation of existing contracts would be harmful to all concerned. If the furnaces and mills accept the new prices with good grace, as for the most part they are doing, the market will be stabilized and the prices on the more highly finished products tend to follow the same trend, although counteracted to a greater or less extent by the scarcity and high price of labor.

A maker of rolling mill machinery: We consider contracts sacred, and do not believe that under any circumstance contracts should be violated, broken or abrogated.

A maker of steel plant machinery: Abrogation of contracts, in our opinion, would be a very serious mistake, as it would only add to the chaos that now exists in business. It would lead to a collapse of the business structure on which we have been operating for so many years. Contracts have been held to be a moral and business obligation in the past; and if contracts were to be abrogated even for a short time, it would destroy the integrity of the system of contracts for a long time to come. Unscrupulous parties to the contract who found it to be working to their disadvantage would have some excuse to have it abrogated, at the same time striving to have favorable contracts remain valid, and thus create an undesirable condition.

A maker of cold-rolled strip steel: Legalized abrogation of contracts is likely to have an unmoral effect on the public. We do not want solemn obligations to be considered as "scraps of paper," nor get our business world into the way of considering lightly its commitments. If price fixing could have been made to affect all materials, contracts as well as future purchases, the effect on the prices of all products made from steel would have been immediate. As it is now, nobody knows when $33 pig will reach plowshares or pruning hooks. That is what the public is interested in, rather than to reduce the earnings of the steel companies, who are paying a large proportion of their earnings to the Government in taxes.

A selling agent for various steel makers' products: On the question of abrogating contracts we feel very strongly. If our government is to lend itself to such socialistic policies we have great fear for the future of American business. To us credit means a great deal, but if we have to abrogate our contracts, we fail to see where we will have any credit left. It puts us in exactly the same position as the man who sells and then because the market goes up refuses to deliver, and sells the same tonnage over again at a higher figure. We certainly have a sufficiency of that type to deal with as it is, and so hope that our Government will not stoop to such low practices.

A manufacturer of bar iron: We feel that contracts should not be abrogated, for the reason that in many cases the manufacturer covers the requirements of the contract by purchases of raw material, and if the contract should be abrogated, he would be left with a lot of possibly high priced material on his hands and subjected to a loss that would be beyond his control. Moreover, manufacturers have always felt that contracts should be equally binding on both parties, and not merely options on the part of the purchaser.

A maker of bar iron: My moral training, together with my business education, the latter covering a period of nearly forty years, has instilled in me such a deep-rooted conviction of the inviolability of contracts that I cannot imagine myself considering the advantages of their abrogation. The disadvantages, by reason of the precedent established, would, in my opinion, so far outstrip the advantages as to preclude any discussion of the question. The Constitution of the United States provides in Section 9, among other things, that "No ex post facto law shall be passed." In Section 10 that "No State shall pass any ex post facto law, or law impairing the obligation of contracts." This would seem to clearly indicate the spirit of the framers of that document, a spirit, that, it seems to me, should prevail for all time.

At the monthly meeting of the Philadelphia Foundrymen's Association at the Manufacturers Club, Philadelphia, Wednesday evening, G. H. Clamer, vice-president of the Ajax Metal Co., Philadelphia, explained the Ajax-Hyatt electric furnace for melting non-ferrous metals. The Phoenix Iron Co. was proposed for membership.

Curtailment of Automobile Construction

Need of Chrome Steel for Munitions Calculated to Reduce Numbers of Pleasure Cars—War Business Will Help Maintain Organizations

WASHINGTON, Nov. 6. — Owing to the demand for chrome steel for the manufacture of munitions, the priority officer of the War Industries Board has issued an order which, in effect, forbids the delivery of this kind of steel for the manufacture of pleasure automobiles. The issuance of this order, which was not publicly announced by the War Industries Board, caused general consternation among automobile manufacturers and in connection with semi-official reports that the Government is preparing to take over numerous automobile plants in whole or in part for the manufacture of airplanes, engines and other war material, brought to Washington during the past week a large number of men prominent in the automobile industry. Their protests are now under consideration by the War Industries Board, and it is possible that the chrome steel embargo may be modified, although there is no prospect that it will be rescinded; in fact, this particular order is believed to be the forerunner of a series designed to cut down the production of what are styled by the War Industries Board, "non-essentials," a term rather loosely applied at present to articles that are of no direct value in the conduct of the war.

The advance guard of the automobile manufacturers arrived in Washington soon after the embargo order on chrome steel was issued. A meeting was at once called of the officers of the Automobile Chamber of Commerce and of the Motor and Accessories Manufacturers. This was followed by a general conference participated in by Col. Charles Clifton, president of the National Automobile Chamber of Commerce. C. W. Stiger, president of the Motor and Accessories Manufacturers, and Coker F. Clarkson, general manager of the Society of Automotive Engineers. Before the conference adjourned Howard E. Coffin, of the Advisory Committee of the Council of National Defense, Gen. C. E. Baker, of the Quartermasters Corps, U. S. A., and Hugh Frayne, labor representative on the War Industries Board, were called into consultation.

Reduced Deliveries of Chrome Steel Proposed

The order of the priority officer with regard to chrome steel cuts off immediately the supply of this metal and in the opinion of experienced manufacturers, who took part in the conference, would cause widespread disaster throughout the industry. The conference therefore proposed a substitute, which would provide for reduced deliveries of chrome steel, but which would not put an end to the production of pleasure cars. The priority order was criticized by the manufacturers on the ground that the entire automobile industry consumes less than 5 per cent of the steel production of the United States and utilizes but a very small percentage of the chrome steel. Other industries, which do not contribute to the waging of war, it was asserted, use quite as much chrome steel as the automobile builders; hence, the priority order in question constituted a clear discrimination against a single industry.

Proposed Cut in Pleasure Car Production

The substitute proposition framed by the conference proposed an immediate cut in the production of pleasure cars of 15 per cent with the understanding that this would be followed by a steady curtailment in this branch of the business until within six months the output of pleasure cars would be brought down to 60 per cent of normal. The leading manufacturers of the country are understood to be well protected in the matter of stocks of chrome steel; hence, in the distribution of this metal during the next six months it was proposed to favor those concerns, and especially the smaller ones, which have little or no chrome steel on hand. To prevent disastrous consequences to the automobile industry as the result of the proposed reduced production of pleasure cars, it was suggested that the Government should place orders for shells of small and medium caliber with those factories equipped for this work or which can be fitted up without great expenditure of time or money.

The substitute proposition of the automobile men was laid before the War Industries Board by a committee appointed for the purpose, which supplemented the formal project with a brief oral argument in support of its adoption. The board is giving the matter careful consideration, and it is believed will reach a decision in the present week. Following the meeting of the automobile men with the board, Director Gifford of the Council of National Defense made an informal statement in which he said that the priority order directed against the manufacture of pleasure automobiles should not be regarded as a discrimination against a special industry. The Government, he said, did not mean to injure the business of manufacturing automobiles, but must conserve all raw materials needed for the production of munitions. It was also the purpose of the War Industries Board, he said, to utilize the plants and facilities of many of the large automobile manufacturing plants and this would necessarily interfere with the production of pleasure cars. This might result, Mr. Gifford said, in cutting down the production of this type of car to about one-tenth of the present output. It would not be surprising, he added, if it should become necessary to follow the example of the British Government, which has prohibited the building of pleasure cars while the war is on. The shortage in the production of coal might prove a factor in the problem, emphasizing the necessity of reducing the output of the automobile and other non-essential industries.

War Business for Automobile Plants

The Aircraft Board is planning to increase the number of automobile manufacturers who are to be called upon to build Liberty motors and other engines for airplanes, and this work, it is thought, will absorb the facilities of a considerable number of the largest plants in the country. The Quartermasters Department will also make a wider distribution of orders for military trucks for the army than has heretofore been contemplated, and the Ordnance Bureau of the War Department has already undertaken a survey of the automobile industry to determine the extent to which its plants can be utilized in the production of shells. It is freely conceded, however, that at best the Government will be unable to utilize all the plants that will be interfered with by the chrome steel order, and it is quite possible that many of the smaller concerns, which are fitted up to manufacture but two or three models of small pleasure cars, will be compelled to close down.

The Council of National Defense has undertaken the task of tabulating the essential and non-essential industries, but does not now contemplate making its categories public at this time. Scarcity of coal will probably force the first curtailment of production, and subsequent orders will be influenced by shortages of other materials.

Listing So-Called Non-Essential Industries

The special committee of the Chamber of Commerce of the United States, which is co-operating with the Council of National Defense, has prepared a bulletin in response to many inquiries as to the Government's plans with respect to so-called non-essential industries and especially as to what course will be followed in withdrawing labor and materials therefrom. It is stated in this bulletin that no policy has been definitely announced

by the Government; nevertheless, the course to be pursued by manufacturers is perfectly clear.

No action except in emergencies should be taken, it is said, unless it be in accordance with some general plan based upon a thorough survey of the industries of the country. "If unnecessary hardship is to be avoided," says Waddill Catchings, chairman of the chamber's committee, "and if there is to be no discrimination, the Government should not act until a general plan has been formulated and made known to the business men of all sections. Before a business is classified as non-essential and deprived by act of government of labor and material, the industry through duly elected representatives should be given an opportunity to discuss the matter; to learn the premises of the Government and the reasons for action.

"The motive of the Government—the concentration of industrial energy toward winning the war—appeals to all, and every industry can be relied upon to assist in bringing itself into adjustment with the war needs of the country.

"Where an industry is regarded as non-essential and must be deprived of labor and materials, such deliberate planning may lead to the use of substitute materials of different processes of production. In this manner unnecessary hardship may be avoided. Furthermore, when the Government is forced to deprive a business of materials and labor because it is non-essential, an effort should be made by the Government to place with the industry orders for product needed in the war. If in placing the war orders effort is made to produce war supplies in the centers where labor is housed, not only will congestion in munition centers be relieved, but there will be avoided at the end of the war the great problem of moving labor back to the normal producing centers."

W. L. C.

Decrease in October Lake Ore Shipments

Iron ore shipments down the lakes from the Lake Superior region in October were 8,193,892 gross tons, compared with 9,116,196 tons in October, 1916, a decrease of 922,304 tons, or 10.11 per cent. The following table gives the October and season shipments by ports and the corresponding figures for 1916 in gross tons:

	October, 1917	October, 1916	To Nov. 1, 1917	To Nov. 1, 1916
Escanaba	995,052	876,488	6,162,774	6,507,482
Marquette	461,284	519,806	2,870,100	3,546,651
Ashland	978,029	1,218,134	6,603,238	7,269,846
Superior	1,876,525	1,732,865	12,253,271	11,493,831
Duluth	2,497,629	3,298,314	17,686,997	19,472,473
Two Harbors	1,385,373	1,470,589	8,677,218	9,642,563
Total	8,193,892	9,116,196	54,253,598	57,932,846
1917 decrease	922,304	.....	3,679,248	.....

For the season the 1917 decrease is 3,679,248 tons, or 6.35 per cent. The Duluth percentage to Nov. 1, 1917, was 32.60 per cent against 33.61 per cent last year, while the Great Northern dock at Superior shipped 18.60 per cent of the total this year against 17.29 per cent to Nov. 1, 1916. The decrease in the total this year to Nov. 1 of 6.35 per cent compares with an increase of 38.54 per cent at the same time last year.

The American Zinc Products Co. has been organized by Youngstown, Ohio, parties with a capital of $1,000,000. It is stated that all of the stock to be issued has been sold, and that they will not issue bonds. Prominently identified with the company are D. W. Kerr, F. W. Stillwagon, W. Manning Kerr, R. A. Leitch and G. P. Gilmer, all of Youngstown. The company is building a 10-mill plant for the manufacture of zinc sheets at Greencastle, Ind. The plant will be completed in about six months and have a monthly capacity for rolling about 2400 tons. H. S. Buck will be general manager of the plant. He is also the managing head of the closely affiliated Fort Smith Spelter Co., operating a plant at Fort Smith, Ark., from which the American Zinc Products Co. will secure a portion of its raw material. The Greencastle plant will employ about 400 men when in full operation.

Defends Action in Paying Bonuses

No definite action was taken at the meeting held in Pittsburgh, last week, of stockholders of the Carbon Steel Co., who entered a suit that is being carried on in the courts of West Virginia, and are trying to compel Charles McKnight, president of the company to pay back into its treasury more than $500,000 bonus money voted to him and other officials by the Board of Directors some months ago. The situation as regards this bonus money, which some stockholders claim was illegally paid, was very fully discussed at the meeting. Charles McKnight, president, has issued a long letter to the stockholders in which he defends his action in paying large bonuses to himself and other officials about a year ago, and in part this letter says:

In October, 1916, when your company had completed all its contracts with the British Government, the general business of your company had reached a condition where the salaries being paid to the officers were, in the opinion of your board, totally inadequate in view of the responsibilities and duties entailed for the coming year. This was largely due to the fact that your company's financial condition had not until that time permitted the payment of salaries commensurate with those paid by other companies in the same business. The president had undertaken the management of the company in 1910 as chairman of your board, but served without salary until October, 1912, when he was made president, with a salary of $6,000 a year, under which he had served until this time. The vice-president and treasurer was receiving a salary of $3,600 a year, and the salaries of the other officers had been in proportion. Many companies in the same line of business were paying large salaries, new companies were springing up on all sides which were ready to pay generous compensation to officials skilled in the steel business, and tentative offers had already been made to some of the officials of your company. Your board in October, 1916, increased the salaries of its executive officers, but, to avoid placing heavy fixed charges on the company's business at a time when the prosperity in the steel business was exceptional but its duration problematical, adopted the suggestion of the president, and entered into an agreement whereby for the coming fiscal year, after the company should earn, the required dividends on the preferred stock and 6 per cent upon the common stock, a sum equal to 20 per cent of the net profits remaining should be paid to the president for distribution among the officers of your company. As before, this matter was reported to the stockholders at the annual meeting held in November, 1916, and was by them unanimously approved.

The annual meeting of stockholders of the Carbon Steel Co. will be held in Pittsburgh Nov. 12, and it is stated that at this meeting efforts will be made by some of the minority stockholders to obtain control. Letters have been sent out by two factions of the company asking for proxies to be used at the coming meeting.

Takes Over Iron Foundry

The Wagner Castings Co., Decatur, Ill., A. W. Wagner, president, has taken over the Decatur Foundry Co., maker of light gray iron castings and will continue the production of these castings, although it is probable that early in 1918 malleable iron castings will be made also. The plant just acquired was formerly the Central Malleable Iron Co. and still contains equipment essential to the making of malleable castings. Mr. Wagner, who heads the new company, organized the Decatur Malleable Iron Co. and is still interested in the latter company.

The Niles Tool Works Co., Hamilton, Ohio, is now employing a full force of men in its foundry that had been closed down for several months on account of a strike. The company refused to recognize the moulders' union and has employed its new force simply as individuals. A large percentage of the striking workmen returned under these conditions.

The Hamilton Furnace Co. at Coke-Otto, a suburb of Hamilton, Ohio, will make improvements to its plant, estimated to cost over $500,000. One of the principal improvements will be a movable car dumper. The plant is now operating at full capacity producing basic pig iron.

MORE STEEL PRICES FIXED

Further Announcement as to Finished Products Made at Washington

Announcement was made Nov. 5 in Washington that the President had approved an agreement made by the War Industries Board with the principal steel industries of the United States fixing maximum prices, subject to revision Jan. 1, 1918, on certain steel articles, as follows:

Sheets.—No. 28 black sheets, $5 per 100 lb., f.o.b. Pittsburgh; No. 10 blue annealed sheets, $4.25 per 100 lb., f.o.b. Pittsburgh; No. 28 galvanized sheets, $6.25 per 100 lb., f.o.b. Pittsburgh. The above prices to apply to both Bessemer and open-hearth grades.

Pipe.—On ¾-in. to 3-in. black steel pipe, discount 52 and 5 and 2½ per cent, f.o.b. Pittsburgh.

Cold Rolled Steel—17 per cent discount from March 15, 1915, list, f.o.b. Pittsburgh.

Scrap.—No. 1 heavy melting, $30 per gross ton, f.o.b. consuming point; cast iron borings and machine shop turnings, $20 per gross ton, f.o.b. consuming point; No. 1 railroad wrought, $35 per gross ton, f.o.b. consuming point.

Wire.—Plain wire, $3.25 per 100 lb., f.o.b. Pittsburgh.

Tin Plates.—Coke base, Bessemer and open-hearth, $7.75 per 100-lb. box, f.o.b. Pittsburgh.

In connection with the above, the iron and steel manufacturers have agreed promptly to adjust the maximum prices of all iron and steel products other than those for which prices have been agreed upon to the same general standard as those which have been announced. It is expected that this will be done promptly and consistently in line with the basic, intermediate, and finished products for which definite maximum prices have been established.

MANY HOUSES NEEDED

Committee Reports on Conditions Resulting from War Demands

WASHINGTON, Nov. 6.—The Committee on Housing of the Council of National Defense, appointed Oct. 9, 1917, to investigate and report upon the extent of the housing problem in connection with workers employed on Government contracts and the relation of that problem to the output of war materials, has submitted its findings to the Council.

The testimony and records obtained by the committee clearly indicate that with few exceptions the Government contracts for ships, guns, ammunition and other war materials have thus far been made with little or no Government provision for the housing necessities incident to a rapid and large increase of labor. In its investigation the committee has been materially aided by the report of Philip Hiss, chairman, sectional committee on housing of subcommittee on welfare work of the labor section of the Advisory Commission, which report called the exigency of the situation to the attention of the Council.

The situation may be well instanced by one New England manufacturing city where there exists a distinct community problem. In that city 16 concerns are engaged upon war contracts, and it was disclosed to the committee on housing that nearly 10,000 additional men, for whom there now exists practically no living quarters, will be required by Jan. 1 if the plants in question are to run to their full capacity.

One great steel company, already mainly employed with Government contracts, has extensive additions to its present plant approaching completion. The testimony before the committee on housing disclosed that unless immediate provision be made for necessary housing, the possible production of guns, gun carriages and other munitions will be curtailed fully one-third of the plant's possible output within the next three or four months.

Notwithstanding the existence of such cases as those cited above, the committee on housing deprecates any exaggeration as to the extent of the existing housing problem. As a matter of fact, many communities and individual industries are now taking care of their own housing requirements. Others, where there is serious congestion, are preparing to do so; but there are a number which will need financial assistance in house building if full production capacity is to be had.

In general, it is the opinion of the committee on housing that the existing emergency demands immediate action and is convinced that under proper safeguards the Government should give quick financial aid to such industries or communities as can clearly demonstrate their right to relief. In this regard, it is suggested that any aid which may be given by the Government should preferably be rendered in the form of loans at a low rate of interest. Some loss to the Government may be reasonably expected, but the expenditure necessary to give relief is negligible when measured by the loss incident to delay in the execution of the vast war orders already placed.

It is the judgment of the committee that an organization of reasonable permanency and authority is necessary to administer quickly and effectively such funds as may be available for housing purposes, and that such organization should have broad powers to conduct building operations, to deal in real estate and securities, and to borrow and loan money.

The committee further recommends that, in line with the recent findings of the Advisory Commission of the Council of National Defense, all authorized agencies of the Government making contracts for war materials shall give due consideration in the future to the labor supply and housing conditions prior to closing contracts, and that future contracts shall be distributed, as far as possible, to prevent undue concentration of workers in any one locality.

The committee on housing particularly emphasizes the conviction that any Government aid for industrial housing should be considered as a war measure and be rigidly confined to cases where restriction of output of war materials would otherwise occur.

The committee on housing of the Council is composed as follows: Otto M. Eidlitz, chairman, architect and builder, New York City; Gertrude Beeks Easley, chairman, welfare department, National Civic Federation; William J. Spencer, secretary, building trades department, American Federation of Labor; C. G. Du Bois, comptroller, American Telephone & Telegraph Co.; Theodore Robinson, vice president, Illinois Steel Co., Chicago.

W. L. C.

War-Service Committee of Boiler Manufacturers

Conforming to the resolution adopted at the meeting of manufacturers with the National Chamber of Commerce requesting all lines of business to appoint a war-service committee to act as "point of contact" between said industry and the Government during the period of the war, the American Boiler Manufacturers' Association has appointed a committee, as follows: George W. Bach, manager Union Iron Works, Erie, Pa.; G. S. Barnum, president Bigelow Co., New Haven, Conn., and W. C. Connelly, president D. Connelly Boiler Co., Cleveland, chairman. Anyone having business pertaining to boilers should, it is emphasized, address the chairman at once.

Th Republic Iron & Steel Co. has opened an office in the Munsey Building, Washington, D. C., in charge of W. H. Oliver, Philadelphia manager of sales. Mr. Oliver will divide his time between Washington and Philadelphia.

Differentials in Pig Iron

Statement by E. H. Gary, Chairman of the Committee on Steel and Steel Products of the American Iron and Steel Institute

By agreement between the General Committee on Steel and Steel Products of the American Iron and Steel Institute and the War Industries Board, approved by the President, the base price of No. 2 foundry iron and also of basic iron was fixed at $33 per gross ton, f.o.b. cars furnace. From these base prices the Sub-Committee on Pig Iron, Iron Ore and Lake Transportation has reported to the General Committee a list of differentials which the General Committee believes is fair and reasonable and in accordance with the usages of the trade, and therefore recommends to the iron industry that the same be adopted to take effect immediately. Judge Gary, as chairman of the general committee, in announcing his list, said: "It is hoped there will be no hesitancy in accepting this recommendation."

The grade of *No. 2 foundry iron* to be equivalent in analysis to:

Silicon	1.75 to 2.25
Sulphur	Not over 0.05

No. 2 soft Southern iron equivalent to No. 2 foundry of same silicon content.

Differentials from the above base price for No. 2 foundry iron to be made for the following changes in specifications:

Forge or mill iron	$1.00 per gross ton under base
Foundry iron running silicon 1.00 to 1.75	0.50 per gross ton under base
Foundry iron running silicon 2.25 to 2.75	0.50 per gross ton over base
Foundry iron running silicon 2.75 to 3.25	1.50 per gross ton over base

Foundry iron in excess of 3.25 silicon, add $1.00 per gross ton for each ½ per cent of silicon over the price for 3.25 silicon iron.

Manganese, sulphur and phosphorus variations to be adjusted as formerly customary in each district having respect to the base price.

Where iron is sold by fracture, the usual grading prevailing in each district to continue.

Malleable iron	$0.50 per gross ton above base
Bessemer iron	10% per gross ton above base
Basic iron	Base price.

CHARCOAL IRON

Southern or warm blast charcoal iron a maximum of $10.00 per gross ton above base for iron ranging 0.40 to 0.60 phosphorus and silicon 1.00 to 2.00.

For grades running below these analyses, corresponding reductions as usual to the trade to be made.

Cold blast charcoal iron, a maximum of $22.00 per gross ton above base with customary reductions for lower grades, as recognized by the trade.

Lake Superior iron $2.50 per gross ton above base for iron averaging 1.25 per cent silicon. Other grades to be adjusted as per the custom of the trade, depending upon the silicon, phosphorus and manganese contents of the iron.

All of these charcoal iron differentials to be considered in connection with the base price.

HIGH SILICON OR SILVERY IRON

For iron containing:

6 per cent silicon	$7.00 per gross ton above base
7 per cent silicon	9.00 per gross ton above base
8 per cent silicon	11.50 per gross ton above base
9 per cent silicon	14.00 per gross ton above base
10 per cent silicon	17.00 per gross ton above base

Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over.

BESSEMER FERROSILICON

For iron containing:

10 per cent silicon	$22.00 per gross ton above base
11 per cent silicon	25.30 per gross ton above base
12 per cent silicon	28.60 per gross ton above base

LOW PHOSPHORUS IRON

Iron containing phosphorus and sulphur not exceeding 0.04, and silicon not exceeding 2 per cent:

For copper bearing iron	$17.00 per gross ton above base
For copper free iron	20.00 per gross ton above base

A sliding scale of $1.50 per gross ton advance for each reduction in phosphorus of 0.005 per cent below 0.04, and $1.75 per gross ton advance for each 1 per cent of silicon in excess of 2 per cent.

New York, Nov. 2, 1917.

Manufacture Under Enemy Aliens' Patents

Regulations for the Granting of Licenses by the Federal Trade Commission—Form of Procedure, Fees, Etc.

WASHINGTON, Nov. 6.—Regulations for the filing of applications for licenses to manufacture, under the terms of the recently enacted trading with the enemy act, articles patented, trademarked or copyrighted by enemy aliens have been prepared by the Federal Trade Commission. The regulations also cover a method for the payment of patent, trademark and copyright taxes, annuities and fees in enemy countries and filing and prosecuting applications therein, and under these provisions of the law the first license to file and prosecute an application for letters patent in Germany, Austria and Hungary has been issued to the Ajax Metal Co. of Philadelphia for an improvement in "oscillation of current method and apparatus," the invention of Edwin F. Northrup, an American citizen of Princeton, N. J. The commission anticipates receiving a large number of applications for permits to manufacture articles patented in this country by German corporations and individuals, and has perfected an organization designed to expedite their consideration and allowance.

License Requirements

Applicants for licenses under patents or copyrights owned or controlled by an enemy or an ally of an enemy are required to file a verified statement with the Federal Trade Commission in concise and non-technical language covering the following points, stating in each case the facts upon which any conclusion may be based:

(a) If an individual, that he is a citizen of the United States. If a corporation, that it is organized within the United States.

(b) That the patent or copyright desired to be licensed is owned or controlled by an enemy or an ally of an enemy.

If it is claimed that the patent or copyright is controlled by an enemy or ally of an enemy, the nature and origin of the control should be plainly stated, whether by contract, agency, stock ownership, or otherwise.

(c) There shall be attached to the application a Patent Office copy of the patent and a certified abstract of title to it, or a specimen of the copyrighted article and a certified copy of the copyright entries and, in the case of a patent, of a certified copy of the petition and all powers of attorney in the file of the application.

(d) That licensing the applicant is for the patented or copyrighted article or the product of the patented process, demand for which is not being met.

(e) That the applicant is able to make or cause to be made the patented or copyrighted article or exercise the patented process. Specifically, that the applicant is technically and otherwise equipped to undertake or procure the manufacture or operate the process and is in fact able to do so.

(f) That the applicant intends to do so in good faith.

(g) The application must be verified by the person applying for the license, and in the case of a corporation by an officer thereof acquainted with the facts recited.

Form of Application

Each application must be accompanied by a remittance of $100 and should be prepared in the following form:

To the Federal Trade Commission:

Application of ..... for a license under patent to ....., date ....., No. .....

(If under copyright, state title of work, name of copyright proprietor, and date of copyright registration.)

The undersigned, for the purpose of securing a license, represents to the Federal Trade Commission as follows:

(a) The undersigned is a citizen of the United States, residing at ..... Street, in the city of ....., State of ....., United States of America. (If a corporation, state under the laws of what State it is organized; the location of its corporate offices, its business offices, and plants or factories.)

(b) The undersigned is desirous of being licensed under the patent (or copyright) above named, which is owned or controlled by ...., a citizen or subject of ..... (state the enemy country or the ally of the enemy of which the patentee or copyright proprietor is a citizen or subject, or if a corporation where it is incorporated, and if the patent or copyright is not owned, but is claimed to be controlled state fully the facts which establish the nature and origin of the enemy or ally of enemy control, whether it is by means of an agency, by contract, by stock ownership in corporation, or otherwise.)

(c) Attached hereto is a Patent Office copy of the letters patent and a certified abstract of its title from the Patent Office and a certified copy of the petition and all powers of attorney in the file of the application (or, in the case of a copyright, a specimen of the copyrighted work, and a certified copy of the copyright entries from the office of the Register of Copyrights.)

(d) It is for the public welfare that the license applied for be granted because—(here state briefly but completely and in non-technical language the reason why it is for the public benefit that the license be granted and specifically the demand for the article prior to the war, the demand for the article at the present time whether or not this demand is being met or can be met, prices obtained prior to the war and prices at the present time).

(e) Applicant is able to make or cause to be made the patented or copyrighted article because—(here state specifically the applicant's experience in the production of articles of the kind covered by the patent or copyright, his technical equipment for manufacturing and selling such articles and his ability to do so, the estimated cost of manufacture and price proposed to be charged if the license is granted).

(If the applicant does not intend to manufacture but to procure the manufacture of the article, state specifically what arrangements have been made or proposed to this end and their terms and conditions. State the name and address of the manufacturer proposed to be employed and his technical equipment, etc., and attach copies of any contracts or proposals.)

(f) The license desired is exclusive or non-exclusive for the following reasons: (Here state reasons why, in the opinion of the applicant, the license should be exclusive or non-exclusive.)

(g) The license is desired—

(1) For the term of the patent or copyright, (2) the duration of the war, or (3) any other period, stating reasons in each case.

(h) The application is also to contain the following: "The undersigned intends in good faith to manufacture or cause to be manufactured the articles licensed and understands that the license, if granted, may not be assigned and may be canceled by the Federal Trade Commission, after due notice of hearing, upon violation by the undersigned of any of the provisions of the 'Trading with the enemy Act' or of any of the conditions of the license."

(Signed) _____ _____,

Applicant.

The applicant is required to attest his application under oath and to forward it in duplicate to the commission. A separate application is required for each patent or copyright. Personal attendance upon the commission at the outset is not necessary, but it is anticipated that in many cases the commission will require hearings, ample notice of which will be given.

Protection to Enemy Alien Owners

In every case where practicable notice of applications for license to manufacture under patents or copyrights owned by enemy aliens will be given to the attorney of the alien patentee or copyright proprietor whose name appears in the file of the applications in

the Patent Office or in the office of the Register of Copyrights. It is not anticipated that such attorneys will be permitted to contest the issuing of licenses, but such notice may frequently have the effect of preventing an injustice where a patent or a copyright issued to an enemy alien has since been conveyed in good faith either to an American citizen or a non-enemy alien. The commission emphasizes the fact that the burden of establishing affirmatively the facts upon which, under the terms of the act, licenses may be granted, is placed upon the applicant for license. It will be noted that this requirement also tends to protect the owners of the patent or trademark against illegitimate exploitation.

Inasmuch as the trading with the enemy act and the President's proclamation vest in the Federal Trade Commission the duty of prescribing the conditions of the license, the commission, pursuant to the authority thus delegated, has decided that only non-exclusive licenses will be issued unless the public interest shall otherwise require. It is anticipated that this stipulation will have a tendency to prevent manufacturers from undertaking the production of articles covered by patents issued to enemy aliens unless the stipulation concerning the requirements of "the public interest" shall be very liberally construed. It is the essence of the conditions under which the manufacture of the average patented article can be made profitable that the producer shall have the exclusive right to make the goods, and very few manufacturers would care to undertake the production for general sale of patented articles if they must meet general competition therein. In some cases, however, there will be a sufficient market for valuable and popular devices covered by enemy alien patents to induce several manufacturers to engage in their production, and the law is likely to be generally availed of by manufacturers of certain articles who heretofore have been obliged to pay royalties upon necessary or desirable attachments, the patents on which are owned or controlled by enemy aliens.

Cost to the Licensee

The cost to a licensee operating under a permit issued by the Federal Trade Commission, in addition to the license fee of $100, is 5 per cent "of the gross sums received by the licensee from the sale of the licensed subject matter," or 5 per cent "of the value of the use of the licensed subject matter" as it may be established by the Federal Trade Commission. For the information of the commission the licensee is required to file semi-annually, on Jan. 1 and July 1 of each year, and oftener if the commission elects, a full statement of the extent of the use and enjoyment of the license and of the prices received from the sale or use of the subject matter of it, and within thirty days thereafter the licensee must pay to the alien property custodian "not to exceed 5 per cent of the gross sums received from the sale of the licensed subject matter, or, if the Federal Trade Commission so order, not to exceed 5 per cent of the value of the use of the licensed subject matter as established by the commission."

If the licensee is not to be the actual manufacturer or producer of the article in question, he will nevertheless be held accountable to the commission for the observance of the terms of his license by the actual producers and any sum that may at any time be payable under the provisions of a license will have the status of a debt due from the licensee to the United States recoverable in an appropriate action in the Federal courts. The commission reserves the right, in its discretion, to give notice in writing to the licensee to terminate the license in whole or in part if payments are not promptly made, if the licensee has failed to satisfy the reasonable requirements of the public and at reasonable prices, or if circumstances have arisen which, in the opinion of the commission, make it just and equitable that the license should be canceled.

W. L. C.

The production of steel in electric furnaces in Canada was 18,797 tons during the first six months of 1917, compared with 19,639 tons for all of 1916.

Betts Machine Co. Sold

Announcement has been made that E. I. Du Pont de Nemours & Co., Wilmington, Del., have purchased the real estate, buildings and equipment of the Betts Machine Co., also of Wilmington, and will use the plant for construction of machine tools needed for the Du Pont machine shops. The patents and good will and name of the Betts Machine Co. have been sold to Charles H. Stoer and M. A. Sherritt of the Sherritt & Stoer Co., Finance Building, Philadelphia, machinery dealers, who will hereafter manufacture for the trade the machines which the Betts Machine Co. has produced. The machines which the Betts Machine Co. now has on order will be completed in the Wilmington plant. The Betts tools have been sold in New York by Manning, Maxwell & Moore, Inc., and in Philadelphia by both Manning, Maxwell & Moore, Inc., and the Sherritt & Stoer Co. The Betts Machine Co. was incorporated in 1879 and was formerly conducted by A. and E. Betts. Alfred Betts was president until 1894. Several changes have taken place in the officiary since that time due to deaths. At present William Betts is president. Charles H. Stoer and M. A. Sherritt organzed the Sherritt & Stoer Co. in Philadelphia about three years ago and have built up a large machine-tool business, being sole agents in that territory for several well-known lines.

Pig Iron Differentials and Extras on Steel Products

The new classification of extras on various finished steel products as announced by the sub-committee on steel distribution of the American Iron and Steel Institute, and published in THE IRON AGE of Nov. 1, will be reprinted in pamphlet form, as will also the statement of E. H. Gary, chairman of the committee on steel and steel products of the American Iron and Steel Institute, of differentials on the various grades of pig iron published in to-day's issue of THE IRON AGE. This pamphlet will be sent to any subscriber so requesting.

In the article published last week one slight error occurred. On rounds and squares 6⅝ to 7¼ in., the extra is 0.625c. instead of 0.025, as published.

Bolt and Nut Manufacturers Meeting

PITTSBURGH, Nov. 7 (*By Wire*).—A meeting of nut, bolt and rivet manufacturers will be held in the Waldorf-Astoria, New York, Wednesday, Nov. 21, to consider the question of whether there shall be a reduction made in prices on nuts, bolts and rivets. Some manufacturers state they are still paying high prices for raw materials and cannot see their way clear to reduce prices on nuts, bolts and rivets until the high-priced raw material has been worked off.

National Tube Co. Issues New Card

PITTSBURGH, Nov. 7 (*By Wire*).—The National Tube Co. has issued new discount cards on tubular products bearing date of Nov. 6 and showing advance over former prices of $8 per ton. This includes black and galvanized steel pipe, oil country goods, line pipe and all other tubular products.

The total assessed value of Minnesota iron mines has been fixed by the State Tax Commission at $295,353,692, an increase of $18,021,697 over the 1916 valuation, which compares with a valuation of only $194,428,928 in 1907, when the State Tax Commission was organized. The mineral assessment will produce a revenue for State purposes for the year of $1,500,396. The average tax rate in the mineral districts, for all purposes, State, county, school and municipal, for 1917 is estimated to aggregate 35 mills. On that basis, the iron ore properties will pay total taxes for all purposes in Minnesota of approximately $10,337,379 for the year, or $4,500,000 more than the estimated income derived from railroad gross earnings taxation in Minnesota for the same period.

THE MANGANESE PROBLEM

New Work of the Bureau of Mines—Steel Industry's Co-operation Vital

WASHINGTON, Nov. 5.—Because of the increasing difficulty in obtaining imported manganese and the vital importance of manganese for the production of the steel needed in the manufacture of war material, the U. S. Bureau of Mines is making a thorough investigation of the possibilities of relief through a more extensive use of domestic ores, according to an announcement made by Director Manning. These investigations have been assigned to the Lake Superior station recently established at Minneapolis. Although the bureau realizes the importance of taking up the iron-ore concentration problems at this station as soon as possible, yet such work is obviously to be classed as a peace problem relating to conservation. The manganese investigation is strictly a war problem dealing with increased production.

The Lake Superior region contains large reserves of manganiferous iron ores and can mine and ship much larger amounts if metallurgical practice can be so modified as to make ores in better demand. For many years our steel makers have relied on imported manganese alloys and ores. The imported ores are suitable for making 80 per cent ferromanganese, which is needed in greater quantities because of a larger proportion of our steel being made by the open-hearth process.

With the low ocean freight rates that prevailed generally during the last 10 or 20 years, it was well-nigh impossible for producers of domestic manganese ore to compete with imported ore. There was little incentive for the exploration and development of manganese ore bodies and their mining was carried on without system. With the outbreak of the war in Europe in 1914 the manganese industry of the world faced new conditions. Consequently, producers in the United States face an unprecedented demand.

To Investigate Manganiferous Iron Ores

Until last year this demand had little effect on production because of the difficulty of interesting capital in an industry that might die with the ending of the war. A clearer conception of the causes of high manganese prices and a belief in the likelihood of these existing for some time after the war has partly removed that tendency. Manganese ore of high grade, suitable for making 80 per cent alloy, is very scarce in the United States, but manganiferous iron ores are much more abundant. Such ores have not been in demand by the steel industry and it is essential to investigate carefully by extensive research the possibilities involved in their use. It is this work that the Bureau of Mines desires to carry out. The sooner the facts can be determined the more valuable they will be.

The bureau realizes that much information has been accumulated by various Federal and State bureaus, technical societies, private operators and individuals. Duplication of present effort and of any reliable results must be avoided. For this reason the bureau hopes to work in co-operation with all agencies interested, with producers and consumers of manganese ore and alloys and with individuals. Indeed, such co-operation is essential in order to serve the country well in the effective conduct of the war. A proper co-ordination of all data now available and of the data obtained in attacking these problems will be of tremendous assistance. Proper credit for such co-operation and assistance will be gladly given. Suggestions and constructive criticism will be greatly appreciated.

The bureau plans to assemble and tabulate information concerning the character and amount of known domestic ores; the current practice in mining and concentration; and the present methods of manufacturing manganese alloys and of using them in steel. When compiled this material should afford a starting point for various original researches.

Problems to Be Studied

The possibility of concentrating various types of ores will be studied by detailed tests and experiments; fundamental thermochemical data relating to manganese and its compounds will be determined and the equilibria of certain fundamental reactions between iron and manganese compounds will be studied. Also, much attention will be given to the development of possible substitutes for manganese in steel making; to the possibility of using more extensively alloys that are not used in what is now considered standard practice, such as alloys containing between 20 and 80 per cent manganese, and alloys containing manganese and other constituents, and to the possibility of increasing the manganese content of basic pig iron in order to lessen the amount of manganese alloy added at the end of a heat, part of this being left as residual manganese in the bath metal. Another problem that will be studied in the light of the results already obtained will be the production of manganese alloys in the electric furnace in localities where power is cheap. During the past summer the bureau has been carrying on a series of experiments in Pittsburgh on the production of alloys in the electric furnace from slags high in manganese.

Much of the work relating to present practice, also certain researches, must necessarily be conducted in the field at mines, concentrating plants, blast furnaces and steel works. In the laboratories of the Lake Superior station, which is situated at and co-operates with the University of Minnesota at Minneapolis, Minn., concentration tests of ores will be made and fundamental laboratory data will be collected. Arrangements are now in progress for co-operative work on other problems at laboratories throughout the country that are equipped to do work of the desired character.

The persons actively engaged in these manganese investigations will comprise the staff of the Bureau of Mines attached to the Lake Superior station, the staff of the Minnesota School of Mines Experiment Station and those members of the Bureau of Mines who may be particularly qualified for certain phases of the work. In order to make this work of the most practical value it is planned to organize a number of advisory committees composed of mine and furnace operators.

Shipyard Strike Ended

SEATTLE, Nov. 5.—After a strike of more than a month in the various shipyards of Portland, Ore., a settlement has been reached—the employees have returned to work, and the ship-construction work has been resumed on a larger scale than ever before. Every effort will be made to rush construction, and make up for the waste of time during the strike. Eleven steel steamers are nearing completion in Portland, four in the yards of the Northwest Steel Co., three at the Columbia River Shipbuilding Co.'s plant, and four on the ways of the Albina Engine & Machine Works. Most of these are 8800-ton carriers. If the strike had not occurred, several of them would have been completed, and machinery partially installed. The shipbuilding concerns in Portland have enough contracts on hand to keep the plants operating to capacity for the next two years. Other yards will be opened, for which negotiations are now under way, additional contracts are pending, and the shipbuilding industry shows extreme activity.

Shipyards in Sattle are likewise getting back to their former high state of efficiency prior to the strike, and work on the large number of vessels under construction is being rushed as much as possible.

A strike of the boilermakers in Vancouver, B. C., which has been in force for two weeks, has been called off by the union, and the men have returned to work. About 700 men were affected.

The Downey Shipbuilding Corporation, Mariners' Harbor, Staten Island, N. Y., has had plans prepared for the erection of 300 houses for employees at its new shipbuilding works, formerly the plant of Milliken Brothers, Inc., structural iron and steel.

Machinery Markets and News of the Works

BUY TOOLS FOR GUN WORK

Government Arsenals and Plants in Market

New Buying Also for Manufacture of Airplane Engines—Simplex Closes and General Vehicle May Buy This Week

Buying of machine tools for the production of big guns for the American Army in France is proceeding on a tremendous scale. Requirements of the Watertown Arsenal, Watertown, Mass., will aggregate several million dollars in value. Purchases will be made soon for the Watervliet Arsenal, Watervliet, N. Y. The new machine shop of the Navy Department at Washington, D. C., must also be provided with a large quantity of equipment. The Dodge automobile plant in Detroit will be devoted to the manufacture of recoil mechanisms for guns and additional buildings will be erected. It is reported that the contract taken by Dodge Bros. aggregates between $20,000,000 and $30,000,000. A large steel company is reported to have plans almost completed for a gun forging plant to cost several million dollars, which will be erected in the Middle West. The Stone & Webster Engineering Corporation, Boston, will close soon for 46 cranes for the Watertown Arsenal.

Needs of the shipbuilding companies are an important factor in present machinery demand. The Fore River Shipbuilding Corporation is still buying. It closed last week for 31 traveling cranes with the Niles-Bement-Pond Co. The Newport News Dry Dock & Shipbuilding Co., Newport News, Va.; the New York Shipbuilding Corporation, Camden, N. J., and the Union Iron Works, San Francisco, Cal., are all large buyers in various markets.

Merchant shipbuilding plants are also buying steadily. The Emergency Fleet Corporation has increased the contract of the American International Shipbuilding Corporation and will do likewise with the Submarine Boat Corporation. Each of these plants will build 150 or more merchant ships during 1918. The American International Shipbuilding Corporation is in the market for about 35 to 40 machines for a fabricating plant at its Hog Island yard. It also requires seven 10-ton traveling cranes and 46 3-ton jib cranes and an equal number of 3-ton mono-rail hoists.

The Simplex Automobile Co., New Brunswick, N. J., is finally going ahead with its plans for building airplane engines for the Government, and has bought about $300,000 worth of machine-tool equipment. The General Vehicle Co., Long Island City, N. Y., is expected to come into the market this week, but its requirements will not be as large as originally planned. Its list issued several weeks ago contained about 900 tools.

There is considerable miscellaneous buying in Eastern markets. E. I. Du Pont de Nemours & Co., Wilmington, Del., will put up a large powder plant, probably in Virginia, and will require equipment for a machine shop. This company has bought 20 presses for its plant at Pompton Lakes, N. J. The Scovill Mfg. Co., Waterbury, Conn., is buying for a fuse contract. One of its orders was for 300 hand screw machines. The Himoff Machine Co., Astoria, L. I., is buying for gun mount work. The Wasson Piston Ring Co., New Brunswick, N. J., is buying for a factory in England. M. J. Gourland, 120 Broadway, New York, has placed orders for automobile factories in France. The American Machine & Foundry Co., Brooklyn; the Brennan Motors Mfg. Co., Syracuse, N. Y., and the Bridgeford Machine Tool Works, Rochester, N. Y., are in the market for a few tools each.

The Baldwin Locomotive Works, Philadelphia, is buying for munitions work and also for export to Russia. A list was issued a few months ago for complete equipment of a locomotive shop in Russia to be built for the Russian Government, and apparently this project has been revived. The Jeanesville works of the Worthington Pump & Machinery Corporation, Hazelton, Pa., placed additional orders last week. The buying of the North American Motors Corporation, Pottstown, Pa., is said to have aggregated about $90,000. This concern will make 6-in. shells. The Landis Tool Co., Waynesboro, Pa., has bought a number of milling machines and lathes for equipping a new addition.

The Union Pacific Railroad Co. is buying for a shop at Pocatello, Idaho. Railroad buying in general is practically negligible.

In the Chicago market a large list has been received from the Four Lakes Ordnance Co., recently formed at Madison, Wis., to manufacture 5-in. guns. The Edward Valve & Mfg. Co. has bought close to $130,000 worth of machine-tool equipment in Chicago for Government work. This company has sublet a small contract to the Chamberlain Machine Works, Waterloo, Iowa. The Cambria Steel Co., Philadelphia, has been looking for tools in Chicago which it could not find in the East. The Miehle Printing Press Co., Chicago, has issued an inquiry.

The principal inquiry in the Cleveland market in the past week was from the Davis Sewing Machine Co. Dayton, Ohio, for about 40 machine tools for shell work.

It develops that the tools recently found in New York export warehouses, which will be taken over by the Government as needed, have a market value of about $10,000,000. A few of these tools will be shipped to the plant of the Simplex Automobile Co. for airplane engine work.

Plans of the Machine Tool Section of the War Industries Board are rapidly nearing completion. The needs of the Government for at least the next six months have been carefully approximated. Various plans are being worked out to speed up production of much-needed tools. Machine-tool builders have been asked to concentrate on the tools which are in greatest demand and curtail production of those which are not

so vital for the war industries. Less confusion in Government buying will be noted as soon as the central purchasing plan, now being worked out, is put into operation. Buying for all of the Government departments will pass through one office in Washington and competition between departments will be obviated.

Deliveries are getting further off, even for the most important Government work. Those who come into the market now with Class A1 priority certificates find that there are so many ahead of them that they must accept deliveries of two and three months or longer. The Simplex Automobile Co., which bought heavily last week, had priority number 88, but only in a few cases did it succeed in getting anything near prompt deliveries. A machine tool builder who is interested in a new ordnance plant said he would ask the Government for *double* A1 priority, a classification which does not yet exist, but his remark illustrates the futility of buyers expecting prompt deliveries even with priority certificates. To relieve the shortage of machine tools more stringent regulations on exports will be adopted. Even for the allied countries orders will be carefully investigated before licenses are granted. Dealers in those countries will undoubtedly find it difficult, if not impossible, to purchase tools for stock, and must show that the tools are needed for immediate use in war industries.

New York

NEW YORK, Nov. 6.

Buying of machine tools for war industries has been resumed on a large scale in the New York market during the past week after a slight lull. The Watertown Arsenal, Watertown, Mass., is one of the largest buyers. A complete list of the arsenal's requirements was not sent to the trade, but from the size of the individual orders placed it is apparent that the purchases will run into several millions of dollars as a great deal of the equipment is of heavy type for a new forge shop, rough machining shop and erecting shop. A single order for one type of tool is said to have totaled about $200,000. The Stone & Webster Engineering Corporation, Boston, which is building the shops, opened bids on Oct. 31 for 46 electric traveling cranes of from 10-ton to 65-ton capacity. There were about 10 bidders, and the lowest bid totaled several hundred thousand dollars. Deliveries of these cranes, as quoted in the bids, averaged from two to ten months. The cranes are wanted by April 1, 1918. The Watervliet Arsenal, Watervliet, N. Y., is making large additions to its gun-making plant and will buy equipment soon.

The Fore River Shipbuilding Corporation continues to place orders for machine tools for its machine shop in Buffalo, and has also bought, through the Aberthaw Construction Co., Boston, 31 traveling cranes from the Niles-Bement-Pond Co. Several locomotive cranes have been purchased.

After much delay the Simplex Automobile Co., New Brunswick, N. J., is going ahead with its plans to make Hispano-Suiza airplane engines for the United States Government and a few days ago placed orders for machine tools aggregating $300,000 or more. Some of the tools found in export warehouses in New York by the Government, as mentioned in THE IRON AGE last week, were taken for the Simplex plant. It is reported that the Simplex contract calls for 4000 motors. The General Vehicle Co., Long Island City, N. Y., is also about to buy and its orders are expected this week. It is said that this company will make 1000 Gnome motors, which is considerably less than the number originally figured upon when the General Vehicle Co. machine-tool list was issued several weeks ago.

The Scovill Mfg. Co., Waterbury, Conn., is buying on a large scale for a Government contract for fuses. An order was placed for 300 Foster screw machines and other tools will be required.

The Union Pacific Railroad Co. is placing orders for equipment for a shop at Pocatello, Idaho. Two gantry cranes have been bought and a number of tools. Two traveling cranes, one of 15-ton and another of 25-ton capacity, will be required.

Twenty presses have been bought by E. I. Du Pont de Nemours & Co., for the cartridge department at their Pompton Lakes, N. J., plant. The Brennan Motors Mfg. Co., Syracuse, N. Y., is buying a few tools for motor work. The Bridgeford Machine Tool Works, Rochester, N. Y., has been inquiring for several tools. The Himoff Machine Co., Astoria, L. I., is buying both new and second-hand equipment for making gun mounts for the Navy Department. The Wanner Piston Ring Co., New Brunswick, N. J., is placing orders for tools for a new plant, to be built in England. M. J. Gourland, 120 Broadway, New York, is buying tools for shipment in several months to automobile factories in France for replacement. The American Machine & Foundry Co., Brooklyn, has been trying to obtain prompt delivery on a number of tools needed for Government work.

Basil Bancroft, American representative of the Whitehead Aircrafts, Ltd., Richmond, Surrey, England, has been making inquiries of the trade as to the possibility of making shipments of tools to England. No list of the requirements of the Whitehead factory has as yet been issued.

A company in the East which has been figuring on a large contract with the Government for making recoil mechanisms for guns has abandoned its plan. It had inquired for about $500,000 worth of machine-tool equipment. It is reported that the Government will place the contract with a company recently formed by leading manufacturers of Detroit and the Dodge Bros. automobile plant will be utilized for this work.

It develops that the machine tools in export warehouses which have been commandeered by order of the War Industries Board, totaled about $10,000,000 in value. Many of these tools were consigned to Sweden and some of them had been in storage for two and a half years. They will be left in the warehouses, but the Government has a complete record of them and will take them out as needed for urgent requirements.

The Submarine Boat Corporation's orders for nine locomotive cranes has been awarded to the Ohio Locomotive Crane Co. The Terry Steam Turbine Co. has bought a locomotive crane for its plant at Hartford, Conn., to which additions have been built for turbine work.

Stephen Ransom, New York, operating a works at 41 West Street for marine repairs, machine work, etc., has purchased property at 408-9-10 West Street for the construction of a new three-story boiler shop.

The Stoddard Union Co., New York, has been incorporated with a capital of $100,000 to manufacture cast steel pipe and pipe fittings. A. Hild, E. O. Aspein and F. B. Potterton, 18 Cliff Street, are the incorporators.

The Gerald G. Freeman Corporation, New York, has been incorporated with a capital of $100,000 to manufacture tools and hardware. H. S. White, T. J. Mahoney and Gerald G. Freeman, 216 West Eighty-ninth Street, are the incorporators.

The Standard Aircraft Corporation, New York, has been incorporated with a capital of $5,000,000 to manufacture aeroplanes. C. H. Day, H. B. Mingle and D. L. Meehan, Jr., 1 West Eighty-eighth Street, are the incorporators.

The Burroughs-Baldwin Co., New York, has been incorporated with a capital of $20,000 to manufacture hardware, cutlery, etc. C. R. Frazer, W. C. Burroughs and D. W. Baldwin, 87 Warren Street, are the incorporators.

The Williams Cabble Excelsior Wire Mfg. Co., 88 Ainslie Street, Brooklyn, has had plans prepared for alterations and improvements in its plant to cost about $16,000.

The Dunlop Wire Wheel Corporation of America, New York, has changed its name to the Ajax Wire Wheel Corporation of America.

The Darling Metal Goods Mfg. Co., New York, has been incorporated with a capital of $10,000 to manufacture metal specialties. R. S. Darling, B. E. Storm and J. E. Watson, 9 Church Street, are the incorporators.

The Grant Hammond Arms Co., New York, has been incorporated in Delaware with a capital of $1,000,000 to manufacture firearms. Arthur W. Britton, Samuel B. Howard and George V. Reilly, all of New York, are the incorporators.

The New York Signal Co., New York, has been incorporated with a capital of $12,000 to manufacture signal apparatus for automobiles. F. J. Benitoa, C. J. and J. R. Avelanal, 111 West Sixty-ninth Street, are the incorporators.

The Peerless Watchmen's Clock Co., New York, has been incorporated with a capital of $75,000 to manufacture special clocks. H. T. Stetson and R. L. Kritzler, 1081 Union Avenue, are the incorporators.

The Kings County Iron Foundry Co., North Thirteenth and Berry streets, Brooklyn, manufacturer of sash weights and other specialties, has been incorporated with a capital of $200,000. T. E. Hodgskin, C. S. Woodman and J. Friedman, 20 Nassau Street, New York, are the incorporators.

The Anco Mfg. Co., New York, has been incorporated with a capital of $250,000 to manufacture automobiles and motor trucks. The incorporators are H. Hartman, D. S. Leiberman and B. H. Resnick, 54 Cathedral Parkway.

Jacobson & Feldherr, Inc., New York, has been incorporated with a capital of $10,000 to manufacture hardware and automobile supplies. D. Lieberman, E. Feldherr and M. Jacobson, 1519 Madison Avenue, are the incorporators.

The Globe Auto Radiator Mfg. Co., Brooklyn, has been incorporated with a capital of $5,000 to manufacture automobile radiators. A. and B. Greenblatt, 1766 Union Street, are the principal incorporators.

Davidson & Schwab, Inc., 126 West Forty-sixth Street, New York, manufacturer of jewelry, has increased its capital from $50,000 to $500,000.

The Otter Mfg. Co., New York, has been incorporated with a capital of $100,000 to manufacture automobile supplies. L. May and S. and M. M. Otter, 243 West Seventeenth Street, are the incorporators.

The Associated Steel Corporation, New York, has been incorporated with a capital of $50,000. R. T. Kahl, A. M. Carbade and M. F. Walser, 309 West Eighty-sixth Street, are the incorporators.

The Tidewater Shipwrights, Inc., New York, has been incorporated with a capital of $10,000. The incorporators are M. P. Wheeler, W. Brown and L. W. Davidson, 18 Christopher Street.

The Kansas City Machine & Supply Co., New York, has been incorporated with a capital of $50,000 to manufacture motion picture machines. J. Robert Rubin, H. T. Edwards, J. H. Halberg and A. D. Flinton, New York, are the incorporators.

The McCoy Iron Works, Seaman Street, Perth Amboy, N. J., has commenced the construction of a new one-story plant about 100 x 400 ft., on Mortimer, near St. Vincent Street, Utica, N. Y., for the manufacture of steel and iron products. Considerable electrically operated equipment will be installed. M. A. McCoy will be local manager.

The Universal Air Motor System, Inc., Newburgh, N. Y., has been incorporated with a capital of $50,000 to manufacture air motors, etc. J. and J. Graziano, and W. W. Babcock, Spring Valley, N. Y., are the incorporators.

The New Era Double Tire Co., 261 West Onondaga Street, Syracuse, N. Y., manufacturer of automobile tires, is contemplating increasing the capacity of its present plant.

The Globe Malleable Iron & Steel Co., 101 Greenway Avenue, Syracuse, has acquired property about 980 x 1000 ft., on Teall Avenue, adjoining its present works, to be used for future extensions. The company has no immediate plans for building. W. C. Lipe is president, and H. H. Elmer, treasurer and general manager.

The Warsaw-Wilkinson Co., Highland Avenue, Warsaw, N. Y., manufacturer of agricultural implements, has increased its capital from $100,000 to $200,000.

The Bridgeford Machine Tool Works, Winton Road, Rochester, N. Y., has awarded a contract for the erection of an addition to cost about $50,000. A. W. Ingle is president. Crowell, Lundoff & Little, Museum Building, Cleveland, are the contractors.

The Farmers Machine & Chemical Co., Rochester, N. Y., has been incorporated with a capital of $100,000 to manufacture machinery, etc. J. N. Marshall, W. S. McKinney and S. G. H. Covell are the incorporators.

The Monarch Blower Co., Troy, N. Y., manufacturer of blowers, has been acquired by the Climax Smoke Preventor Co., Boston. The new owners contemplate increasing the capacity of the plant. B. L. Ames is general manager.

The Transmission Ball Bearing Co., 1050 Military Road, Buffalo, manufacturer of ball bearings, etc., has acquired about seven acres on Military Road for the erection of a new plant.

The De Vogel Machine & Welding Co., Paterson, N. J., has been incorporated with a capital of $25,000 to manufacture tools and other products. John and Richard De Vogel, and Robert T. Hamilton, Paterson, are the incorporators.

The Atlas Welding Co., 146 Irving Street, Rahway, N. J., has been incorporated with a capital of $50,000 to manufacture acetylene cutting and welding apparatus. Walter W. Todenwarth, Roselle; John Grouss and Clarence E. Pryor, Elizabeth, are the incorporators.

The Samuel L. Moore & Sons Corporation, Elizabeth, N. J., announces the acquisition of its plant by the Moore Shipbuilding Co., a subsidiary of the Bethlehem Shipbuilding Corporation. The Liebig Mfg. Co. has also been acquired and will be used as a shipbuilding plant in conjunction with the Moore works.

The National Auto Accessories Co., South Orange, N. J., has been incorporated with a capital of $50,000 to manufacture automobile accessories. Jerome C. Beck and Roy Choen, South Orange, are the incorporators.

Reinhold Schumann, Inc., East Orange, N. J., has been incorporated with a capital of $50,000 to manufacture surgical instruments. The incorporators are Gordon Grand, Charles O. Geyer and Harry H. Picking, East Orange.

The Improved Rubber Co., Bayonne, N. J., has been incorporated with a capital of $100,000 to manufacture rubber goods. A. A. DeBonneville, Bayonne, and A. S. Perry, Branford, Conn., are the principal incorporators.

The A. W. Wheaton Brass Works, 157 New Jersey Railroad Avenue, Newark, N. J., specializing in the manufacture of builders' hardware, will erect a new one-story brass foundry, about 33 x 50 ft.

A one-story power plant, about 46 x 90 ft., will be erected by the United Color & Pigment Co., Newark, on Evergreen Avenue, near the Pennsylvania Railroad.

The E. J. Kerns Mfg. Co., Newark, has been incorporated with a capital of $50,000 to manufacture aeroplanes. Francis J. Kerns, Newark; Edward J. Kerns, Worcester, Mass.; and James F. Kelly, East Orange, are the incorporators.

The Weston Electrical Instrument Co., Weston Avenue, Newark, manufacturer of electrical measuring instruments, has increased its capital from $500,000 to $1,000,000.

The Pulsometer Steam Pump Co., 485 South Twenty-first Street, Irvington, Newark, manufacturer of pumps, will erect a one-story addition.

The Avery Mfg. Co., 119 Griffith Street, Jersey City, has been organized to manufacture folding machines. Howard F. Avery, Riverside Drive and Eighty-fifth Street, New York, heads the company.

The Atlas Steel Casting Co., Buffalo, is building an addition, 40 x 96 ft., to its foundry at Elmwood Avenue and the Erie Railroad.

The American Radiator Co., Buffalo, is completing drawings for a one-story addition, 120 x 200 ft., to its foundry at Elmwood Avenue and the New York Central Railroad Belt Line.

The O'Neil Iron Works, Inc., Buffalo, has been incorporated with a capital stock of $400,000. Lawrence W. and William D. O'Neil and John M. Hull are the directors.

The Empire Engineering Co., 1042 Marine Bank Building, Buffalo, has completed plans for a power house, 50 x 85 ft., which it will erect at the foot of Michigan Street.

The Volz-Guild Co., Buffalo, has been incorporated with a capital stock of $50,000, to manufacture steel and iron products and railroad specialties. For the present its products will be manufactured by contract and later a plant will be equipped. George Volz, Rufus C. Guild and William H. Means are the directors. Offices are being established in the Ellicott Square Building.

The Beaver Board Companies, Buffalo, has plans for a four-story reinforced concrete addition, 40 x 80 ft., to plant at Beaver Road, Ontario Street and the New York Central Railroad. William F. MacGlashan is president.

The Vulcan Steam Forging Co., Buffalo, is building a power house at Rano Street and the Lackawanna Railroad.

The Kellogg Structural Steel Co., Buffalo, is building an addition, 55 x 150 ft., to its fabricating plant at Stone Street and the New York Central Railroad.

The United States Lens Co., Geneva, N. Y., is taking bids on revised plans for a one-story addition to its factory, 65 x 180 ft. C. E. Wilson is president.

The Union Carbide & Carbon Corporation of Niagara Falls, capitalized at $15,000,000, has been incorporated to supersede the Union Carbide Co., and continue the operation of the plant and business at Union Road and the New York Central Railroad Belt Line and the Niagara Falls Junction railroads. The directors are C. K. G. Billings, Charles A. Coffin, New York, Myron T. Herrick, Cleveland, and Nicholas Brady.

B. T. Converse, United States Government engineer, is preparing plans for a one-story ordnance factory, 200 x 300 ft., at the Watervliet Arsenal. W. W. Gibson is commandant.

Philadelphia

PHILADELPHIA, Nov. 5.

The American International Shipbuilding Corporation has issued inquiries for cranes and machines for the equipment of a plate and angle shop at its Hog Island shipyard. Bids will close on Nov. 6 for seven 10-ton traveling cranes, 70-ft. span, and 45 3-ton jib cranes with 45 2-ton electric monorail hoists. Ten are of the bracket type and 35 of the mast type. About 35 or 40 machines will be required for fabricating work, including punches, shears, bending rolls, shapers, planers, radial drills, etc. Nearby deliveries are asked for, and it is known that a number of concerns will be unable to quote because their output for several months ahead is already preempted on priority orders.

Cramp & Co., Denckla Building, Philadelphia, are making

inquiries for supplies and equipment for the $1,000,000 machine shop which the Navy Department will build at Washington. The machine-tool equipment of this shop will total many millions of dollars. Bids for construction of the building closed on Nov. 5.

E. I. Du Pont de Nemours & Co., Wilmington, Del., will construct another large powder plant at the behest of the United States Government. It is reported that it will be located somewhere in Virginia. The company is inquiring for eight locomotive cranes with buckets for excavating and handling material and it is understood will soon issue an inquiry for considerable machine-shop equipment. It has also been reported, though not confirmed, that the Du Pont Company will build a powder plant in France for the United States Government.

The Baldwin Locomotive Works, Philadelphia, is buying machine tools for munitions work and has also closed on a number of tools for export to Russia. A list was issued a few months ago for a complete equipment for a locomotive shop to be built in Russia for the Russian Government, and it is said that this project has now been revived and will be carried out.

The Jeanesville works of the Worthington Pump & Machinery Corporation at Hazleton, Pa., continues to buy for munitions work and last week closed orders amounting to $30,000 to $40,000. Several other large machine-tool orders have been placed within the past few weeks.

The New York Shipbuilding Corporation, Camden, N. J., has been buying throughout the past week. Its orders in the aggregate are very large, but will not approximate those placed by the Fore River Shipbuilding Corporation, Quincy, Mass., which is also to build destroyers. An unofficial estimate is that the buying of the New York Shipbuilding Corporation may reach $1,000,000 or more. So far, the William Cramp & Sons Ship & Engine Building Co., Philadelphia, has bought comparatively little. The Newport News Dry Dock & Shipbuilding Co., Newport News, Va., has come into the market and its purchases may also reach about $1,000,000. This company will build about 20 destroyers.

The North American Motors Corporation, Pottstown, Pa., has closed for equipment for 6-in. shell work. Its orders are said to have aggregated about $90,000.

The Landis Tool Co., Waynesboro, Pa., as bought a number of tools, mostly milling machines and lathes, for an addition to its plant.

It is reported in the trade that the Budd Mfg. Co., Philadelphia, now making wire wheels, may take another contract soon and will be in the market, in that event, for additional machine-tool equipment.

The Chesapeake Iron Works, Baltimore, Md., which has recently begun the building of electric traveling cranes, has taken on a considerable number of large orders, and will increase the capacity of its plant by the addition of an erecting shop, one story, 40 x 210 ft., costing about $150,000. This expansion will presumably include the purchase of some new equipment.

The Haines, Jones & Cadbury Co., Philadelphia, brass goods manufacturer, has purchased several new machine tools.

The International Auto Parts Co., Philadelphia, has been incorporated with a capital of $50,000 to manufacture automobile parts. Philip Belasco, 1806 North Eighth Street, is treasurer.

The Allen Iron & Steel Co., Philadelphia, operating machine repair shops at Third and Venango streets, will build a one-story addition, about 35 x 84 ft.

The Bitumo Enamel Co., Gloucester City, N. J., has been incorporated with a capital of $100,000 to manufacture enamel ware. Hugh V. Ramsay, Elmer J. Shinn and Frank Breckenridge, Gloucester City, and Norman Burn, Camden, are the incorporators.

The Verilite Metals Co., Philadelphia, has been incorporated with a capital of $1,000,000 to manufacture metal and aluminum products. F. R. Hansell, Philadelphia, and S. C. Seymour, Camden, N. J., are the incorporators.

A power house will be built by Winfield S. Barnes & Co., 1614 Cherry Street, at their new plant to be erected in the Frankford section at a cost of about $75,000.

William B. Chambers, Philadelphia, will build a one-story machine shop, 32 x 32 ft., at Seventy-second and Yocum streets.

The Clinton Shipbuilding & Repair Co., Philadelphia, has been incorporated with a capital of $50,000. F. J. Bradley is treasurer.

The Harrison Safety Boiler Works, Seventeenth Street and Allegheny Avenue, Philadelphia, will erect a small addition to its foundry.

The National Auto Top Co., Philadelphia, has acquired property on Princeton Avenue, Trenton, N. J., for the establishment of a new plant.

The Weatherly Foundry & Machine Co., Hazelton, Pa., is planning for the erection of a new electric power plant.

The Badenhausen Co., Philadelphia, which will supply many boilers for the merchant fleet now being built by the Emergency Fleet Corporation, is making extensions and improvements at all of its plants. About $300,000 is being spent for additions and new equipment. At its works at Bound Brook, N. J., known as the Bound Brook Engine & Mfg. Co., 18 triple expansion marine engines will be built for merchant ships. Machine-tool equipment has recently been purchased for that shop. The shops at Norristown and Bridgeport, Pa., are being enlarged and an entirely new plant is being built at Cornwells, Pa., on a 73-acre site. A new boiler shop, 200 x 275 ft., is the first unit of the new Cornwells plant.

Baltimore

BALTIMORE, Nov. 5.

The Bartlett-Hayward Co., Scott and McHenry streets, Baltimore, will build a new one-story plant, 160 x 380 ft., at Gunpowder and Hamburg streets, to cost about $79,500. Morrow Brothers, 1201 Fidelity Building, have the contract.

The Baltimore Enamel & Novelty Co., Westport, Md., has been incorporated with $1,500,000 capital stock by Henry A. Brehm, Arthur P. Claridge and Harold B. Little to manufacture enamel ware.

The Poole Engineering & Machine Co., Woodberry, Md., will build a two-story office building, 32 x 48 ft., at Railroad and Woodberry avenues, at a cost of $4,300.

A permit has been granted to the Porcelain Enamel & Mfg. Co., Baltimore, to construct a plant, 120 x 319 ft., at Ridgely and Bayard streets at a cost of $40,000. P. O. Kellholtz, 1602 Continental Building, is the architect.

The Crown Cork & Seal Co., 1511 Guilford Avenue, Baltimore, will build an addition to its power house at Highlandtown, Md.

The Shawinigan Electro Products Co., Lexington Street Building, Baltimore, has increased its capital stock from $500,000 to $750,000.

The Universal Aircraft Construction Co., Wilmington, Del., has been incorporated with a capital of $1,000,000 to manufacture airplanes. George G. Steigler and E. E. Wright, Wilmington, are the incorporators.

The Bedford Can Co., Bedford, Va., has increased its capital from $50,000 to $100,000.

The Economy Electric Co., Norfolk, Va., has been incorporated with a capital of $50,000 to manufacture electrical supplies. Charles A. and E. R. Page, Norfolk, are the principal incorporators.

Chicago

CHICAGO, Nov. 5.

The war demand for machine tools is approaching full flood in this section, with the problem of finding them to sell growing more acute, especially with regard to large tools. Interest the past week has been largely centered in the equipment required for the manufacture of 5-in. guns. A large list of such tools has been issued by the Four Lakes Ordnance Co., recently incorporated at Madison, Wis., by officials of the Steinle Turret Machine Co. of that city.

Not much is heard of new shell orders, but a steadily growing number of manufacturers are taking on various forms of Government work such as guns, mounts and their parts, forgings for ships, etc. The Edward Valve & Mfg. Co., which has large orders for fittings and 3-in. shells, has bought close to $130,000 worth of equipment. To permit the fulfilment of orders for products in its own line, it has sublet its shell contract to the Chamberlain Machine Works, Waterloo, Iowa.

Big planers and boring mills continue in conspicuous demand, one large dealer stating that the extent to which orders for these machines, either new or second-hand, have to be turned down is disheartening. They simply cannot be had for any kind of near delivery. Under such circumstances even priority orders cannot be promptly filled.

The Cambria Steel Co., Philadelphia, has been looking in this market for machines which it could not find in the East. Several tools have been purchased here for delivery to an automobile company which is to locate in Buffalo. A Waukegon, Wis., company has been an active buyer. A local firm which has inquiry out is the Miehle Printing Press Co., Chicago.

The Krasberg Mfg. Co., Chicago, is to enlarge its facilities for the manufacture of tools, jigs and fixtures.

The Union Special Machine Co., Chicago, plans to build an eight-story factory to increase its output of sewing machines, there being in great demand for the manufacture of garments for the army and navy.

Practically all factory extensions and new shops now reported are related directly or indirectly to war needs which is in compliance with Government request.

The Standard Spiral Pipe Works, Chicago, which has contracts for reinforced pipe, is equipping a forge shop and in addition to forging pipe couplings may take on a Government contract for ship forgings.

It has been announced that the size of the Holt Mfg. Co., Peoria, Ill., which is committed to supplying the Government with tractors and shells, will be tripled in size, so that eventually 1200 machinists will be employed. It is estimated that the improvements will cost about $500,000 and be completed by Jan. 1. A Government training camp will be established near the plant for instructing army men in the management of the so-called "tanks."

The Motors Appliances Co. will establish a plant in East Moline, Ill., for the manufacture of the Benson automobile signal device and other accessories and has purchased the former plant of the Fuller-Lee Disc Co. G. L. Rowe, East Moline, is secretary.

The Dirigible Auto Light Co., St. Joseph, Mo., has been incorporated with a capital stock of $25,000 for the manufacture of devices for focusing, adjusting and turning headlights on automobiles, locomotives, interurban cars, etc. Dr. U. G. Crandell, Dr. E. H. Bullock and John P. Strong are the incorporators.

The Avery Co., Peoria, Ill., has purchased the plant of the Davis Mfg. Co., Milwaukee, Wis. The latter company has supplied the Avery Co. with gasoline motors for tractors.

The U. & J. Carburetor Co., Chicago, has been incorporated in Delaware with a capital of $250,000 to manufacture carburetors. Frank A. Urwan, J. W. Johnson and George E. Brannan, all of Chicago, are the incorporators.

Catalogs Wanted

The H. Mueller Mfg. Co., Decatur, Ill., desires a catalog library covering lathes, drilling machines, automatics, etc., and metal-working machines generally.

Milwaukee

MILWAUKEE, Nov. 5.

A feature in the metal-working industry in this section is the unprecedented activity in the drop-forge business. A number of new projects have been established in Wisconsin the past six months, others are in process of completion, and existing forge-shops are making extensive additions. Several of these are identified with railroad forgings, while others are producing a varied line of material for Government war requirements.

The demand for machine-tools, especially milling machines, continues at a high ebb. October business was by far the largest that local builders have ever known. Several new shop extensions which will be available about Dec. 1 or Jan. 1 and furnish some relief from the pressure upon existing facilities. While local shops could use many more skilled and unskilled men, the requirements are fairly well taken care of for the present.

Because of the close co-operation between the machine-tool industry and the Government, manufacturers experience little difficulty in obtaining sufficient shipping facilities, which are lacking in the more private lines of business.

The Four Lakes Ordnance Co., Madison, Wis., organized by interests owning the Steinle Turret Machine Co., Madison, to manufacture naval ordnance for the Government, has awarded the general contract for the erection of its new plant to the Austin Co., Cleveland. It will be of steel, brick and reinforced concrete, 150 x 500 ft., and is to be completed by Jan. 1. G. A. Steinle is in general charge.

The Milwaukee Forge & Machine Co., 224 Lake Street, Milwaukee, has purchased a 5-acre site at Oklahoma Avenue, Manitoba Street, and the Chicago & Northwestern Railroad tracks, and will spend $100,000 in the construction and equipment of a new plant. The first units will be a forge shop, 75 x 150 ft., 50 ft. high, and a one-story machine shop, 65 x 200 ft. The officers are: President, George P. Pillar; vice-president and treasurer, John Eckert; secretary, P. J. Ramstack.

The United States Switch Co., Eau Claire, Wis., recently organized with $1,750,000 capital, and now operating in the former plant of the Eau Claire Mfg. Co., is preparing to erect a drop forge shop addition, 60 x 130 ft. Bids will be taken about Dec. 1. T. C. Hadley is general manager.

The Otto Biefeld Co., Watertown, Wis., expects to be ready for bids Dec. 1 for the erection of a foundry and machine-shop addition, estimated to cost $40,000. Max Biefeld is secretary.

The Northern Boiler & Structural Works, Appleton, Wis., will spend between $30,000 and $40,000 in the erection and equipment of a one-story shop addition, 100 x 150 ft. Bids probably will be taken late in November.

The Arneson Foundry Co., South and Exchange Streets, Kenosha, Wis., is reported to be considering the erection of an addition to its plant. The company manufactures brass and iron castings, and specializes in heavy brass work.

W. H. Stewart, Delavan, Wis., will erect a machine-shop, farm implement and automobile warehouse, 70 x 100 ft., costing about $15,000.

J. H. Boggess, 21 North Union Street, Fond du Lac, Wis., has organized the Boggess Mfg. Co. and leased the Haas Building, Second and Macy Streets, which will be equipped to manufacture a sheet metal mop wringer.

The Titan Truck & Tractor Co., 843-849 Thirtieth Street, Milwaukee, recently incorporated with a capital stock of $100,000, has changed its corporate style to the Titan Truck Co., having abandoned its original plan of building tractors, at least for the present. Joseph C. Millman is president and general manager.

B. Wiesniewski, of John Wiesniewski & Son, 904-906 Kinnickinnic Avenue, Milwaukee, machinists, has organized the Motor Specialties Co. of Milwaukee, with a capital stock of $5,000, to manufacture automobile bodies, accessories, supplies, etc.

The Record Needle & Mfg. Co., 135 Second Street, Milwaukee, has been incorporated with a capital stock of $75,000 to manufacture talking machine and phonograph needles and later sewing machine and other textile needles. A factory will be equipped at once. The officers are: President, George F. Ruez; vice-president, Samuel W. Goldsmith; secretary, Harry A. Goldsmith.

The Kant-Mis Spark Plug Co., Green Bay, Wis., has been incorporated with a capital stock of $10,000 to manufacture spark plugs and other gas engine and automobile devices and accessories. The incorporators are William C. Haslem, Bearl E. Calburn and Jack Gilleaume.

The Gillette Rubber Co., Eau Claire, Wis., which recently completed its new plant, will add a boiler and transformer house, 65 x 81 ft., 60 ft. high, with a 175-ft. concrete stack, 15 ft. in diameter. The installation will include two 315-hp Sterling boilers; hydraulic pumps; open switchboard and overhead coal bunkers of 650 tons capacity, with automatic stokers. R. B. Gillette is vice-president and general manager.

The Allen-Bradley Co., 495 Clinton Street, Milwaukee, manufacturer of electric controlling devices, rheostats, etc., has increased its capital stock from $136,000 to $168,000 to accommodate its growing business. Harry L. Bradley is vice-president and general manager.

The Ajax Forge Co., Superior, Wis., started operations in its new plant Nov. 1, which represents an investment of about $200,000. The forge shop is 120 x 200 ft., and the blacksmith shop 50 x 80 ft. Much of the production will go to the Great Northern Railway, it is stated. C. O. Hunt is general superintendent.

The Stegeman Motor Car Co., 606 Linus Street, Milwaukee, manufacturer of 6-cylinder, worm-drive motor trucks exclusively, is reorganizing its official personnel following the resignation of Oscar Stegeman as president and general manager. The controlling interest now is represented by Arthur Davidson, of the Harley-Davidson Motor Co., motorcycle manufacturer, Milwaukee. The Stegeman plant has been doubled in size during the last five months.

J. Frederick Palmer, 60-64 Third Street, Milwaukee, manufacturer of tools and dies, has incorporated under the name of the J. Frederick Palmer Mfg. Co., with a capital stock of $25,000. The business will be enlarged to manufacture machine tools as soon as facilities can be provided. N. C. Woodin and Herbert P. Manger are also incorporators.

The Turner Mfg. Co., Port Washington, Wis., manufacturer of gas engines, tractors and farm machinery, has increased its capital stock from $150,000 to $250,000. L. M. Turner is vice-president and general manager.

Detroit

DETROIT, Nov. 5.

Large orders for munitions have caused a rush of inquiries to machine tool jobbers, which are expected to result in good business within a few weeks.

Dodge Bros., Detroit, have a Government contract for between $20,000,000 and $30,000,000 worth of munitions,

which will probably be increased. Work has been started on a munition plant on the Lynch road, east of Mt. Elliott Avenue, Detroit. It is reported that the building will be ready for occupancy next spring as construction materials have been guaranteed by the Government.

The Packard Motor Car Co., Detroit, is erecting a large building in the same neighborhood for the manufacture of materials for the Government, and a third plant for another company is in prospect.

It is reported that a contract involving $100,000,000 has been promised an organization of leading Detroit business men and financiers. At present the organization is being perfected and definite announcement of the plans are being withheld.

The local labor situation has been affected by the scarcity of skilled men. Machinists are drawing high wages and it is impossible to secure enough to run all plants to capacity. The coal situation has not improved, and large companies are facing a shutdown unless the situation is relieved. Transportation difficulties have lessened, but raw materials are still extremely hard to obtain.

The old plant of the Bay City Box & Lumber Co., Bay City, Mich., has been purchased by a newly organized company, in which Bay City, Detroit and Toronto capital is interested, to manufacture airplane parts for the Government. Additions are planned so that later complete airplanes may be manufactured. Capt. E. L. Janney, Canadian army aviator, announced the formation of the company.

The East Fulton Hardware, Heating & Plumbing Co., Grand Rapids, Mich., has been organized with a capital of $20,000. The stockholders are Harry VanderVeen, Jennie Grougan and Cornelius VanHouten.

The Triangle Truck Co., St. Johns, Mich., has resumed work on its new plant which will be pushed to completion.

The Fuller & Sons Mfg. Co., Kalamazoo, Mich., maker of automobile parts, is installing machinery and equipment in its new factory, which is nearly completed. The addition of two buildings will more than double the floor space.

Cleveland

CLEVELAND, Nov. 5.

The market is somewhat quieter than it has been owing to the absence of round lot buying, but steady demand exists for small lots of tools and single machines. Practically all business being placed is for Government work. With slow deliveries and high prices buyers generally are only purchasing machinery that they cannot get along without. With the exception of an inquiry from the Davis Sewing Machine Co., Dayton, Ohio, for about 40 machines for shell work, no large list came out the past week. A let-up is noted in the demand from rubber companies, some of which announce that they do not expect to buy any more equipment this year. Considerable business has been coming from this source recently.

The G. H. Scott Machine Co., Cleveland, has commenced the erection of a new one-story plant, 60 x 166 ft., at West 114th Street and Locust Avenue, which will about double its present capacity.

A. P. Schraner, Cleveland, will erect a new two-story pattern works, 60 x 107 ft., at 3338 Payne Avenue.

The Toledo Plate & Window Glass Co., Toledo, Ohio, will erect a plant on St. Clair Avenue between East Thirtieth and Thirty-third Streets, Cleveland, which will include finishing works, warehouse and office building. Walker & Weeks are the architects.

The Grabler Mfg. Co., Cleveland, which will build a new three-story foundry, 47 x 130 ft., has awarded the general contract to the Sam W. Emerson Co., 1900 Euclid Avenue.

The Warner & Swasey Co., Cleveland, has placed a contract for the erection of a two-story reinforced concrete factory, 71 x 100 ft.

The Davis Sewing Machine Co., Dayton, Ohio, has an inquiry out for about 40 machine tools, including five milling and nine drilling machines, four boring mills, five turret lathes, sixteen miscellaneous machines, including two plain grinding machines, a double acting toggle press, punch and shearing machine, bolt riveter, engine lathe and two 25-ton bulldozers.

The H. L. Hurst Mfg. Co., Canton, Ohio, maker of spraying machines, has increased its capital stock from $100,000 to $150,000. It will soon move from Canton to Greenwich, Ohio.

The Benoist Aeroplane Co., Canton, Ohio, is equipping a temporary building and announces that it will build a new plant next spring.

The Champion Spark Plug Co., Toledo, has purchased the properties of the F. Bissell Co. and the City Foundry, adjoining its plant. The buildings are being remodeled and will be used as machine shop, steel drawing department, and warehouse. It has also purchased 4 acres of land nearby for further expansions.

The Niles Forge & Machine Shop, Niles, Ohio, has broken ground for a new machine shop, 40 x 80 ft.

Indianapolis

INDIANAPOLIS, Nov. 3.

The Indianapolis Engineering Co., Indianapolis, has been incorporated with $50,000 capital stock to manufacture machinery. The directors are Arthur J. Gibbons, William Brandt and Raymond W. Beckman.

The Kokomo Rubber Co., Kokomo, Ind., has increased its capital stock from $200,000 to $1,000,000.

The United States Traction Wheel Co., Kokomo, Ind., has been incorporated with $100,000 capital stock to manufacture wheels for tractors. The directors are Alton G. Seiberling, Harry F. Tate and David McCosker.

The Searle Mfg. Co., Anderson, Ind., has been incorporated with $10,000 capital stock to manufacture files and other tools. The directors are Frank F., Samuel H. and C. E. Searle.

The R. W. G. Foundry Co., Anderson, Ind., has been incorporated with $9,000 capital stock to manufacture gray iron castings. The directors are Myron G. Reynolds, John C. Westerfield and Jacob C. Groble.

The Benham-White Co., Crothersville, Ind., has been incorporated with $17,000 capital stock to manufacture woodenware. The directors are Clyde W. Keach, Harlan B. White and Alex. W. Benham.

The Alpha Electric & Mfg. Co., Warsaw, Ind., has been incorporated with $50,000 capital stock to manufacture mechanical and electrical devices. The directors are Walter H. Stanley, Angus C. McDonald, George W. Polk, John William Scott and Bertram Shane.

The Gary Steel Safety Can-Opener Co., Gary, Ind., has been incorporated with $40,000 capital stock to manufacture kitchen utensils. The directors are Stewart P. Peabody, W. D. Oakley and M. L. McDade.

Negotiations are about to be closed whereby the Wagner Axle Co., Anderson, Ind., will acquire the De Tamble motor plant of Anderson. It is reported that the company has a contract to supply axles for Government vehicles.

Cincinnati

CINCINNATI, Nov. 5.

The report of the Cincinnati Building Commissioner for the month of October shows a decided falling off in building operations, as compared with October, 1916. The total for the first 10 months of this year, however, is more than $600,000 in excess of that for the first 10 months of 1916. This is due in a large measure to the increased number of permits for manufacturing buildings, some of which have been completed and are now occupied, while others are under construction. The plant of the American Tool Works Co., built this year, is now occupied. The Carlton Machine Tool Co. has finished the installation of its equipment in a new building on Spring Grove Avenue, and the Champion Tool Works Co. expects to move into its new plant at Winton Place soon after Jan. 1. At Oakley additions have been made to the plants of the Cincinnati-Bickford Tool Co., Cincinnati Planer Co., Cincinnati Milling Machine Co., Modern Foundry Co. and the Cincinnati Frog & Switch Co.

Inquiry for machine tools is still very good, with the larger lathes, boring mills and milling machines leading. Although inquiries from manufacturers who have no Government contracts is on the increase it has been found difficult to take on all the business offered. A conservative estimate is that Government orders, either directly or indirectly, take up fully 80 per cent of the capacity of local machine tool plants.

The Cisco Machine Tool Co., Cincinnati, has just finished a one-story brick and steel addition to its plant, 30 x 120 ft. A permit has been taken out for another extension, 33 x 110 ft., and also for an additional story to the main plant, 63 x 110 ft. The company is rushed with work and will equip the new additions as soon as possible.

The Ott Grinder Co., Indianapolis, Ind., is inquiring in this market for a 36-in. to 42-in. x 14 ft. planer, either new or second-hand.

The Buckeye Iron & Brass Works, Dayton, Ohio, has increased its capital stock from $75,000 to $200,000 and will increase the capacity of its plant. The company makes a specialty of cotton oil mill machinery.

The Dayton Aluminum & Mfg. Co., Dayton, Ohio, has been

incorporated with $10,000 capital stock by Leo A. Stotter and others. The company's plans have not as yet been given out.

The Randle Machinery Co., Cincinnati, is contemplating an addition to its plant on Spring Grove Avenue.

The D. Gruen Sons & Co., Cincinnati, has increased its capital stock from $500,000 to $600,000. No confirmation has been obtained of the report that its watch-making plant on Walnut Hills will be enlarged.

The J. C. Callery Engineering Co., Columbus, Ohio, has increased its capital stock from $125,000 to $350,000.

The Buckeye Steel Castings Co., Columbus, Ohio, has recently completed an addition to its administrative building that provides for a dining room to serve its 125 office employees.

The Blue Valley Creamery Co., Chicago, has purchased the plant of the Ohio Dairy Co., Columbus, Ohio, and has plans for the erection of a building to cost $50,000 for which refrigerating equipment will be required.

It is currently reported that the Carman Mfg. Co., Columbus, Ohio, has purchased the sheet metal plant of the John A. Bell Co., Dresden, Ohio, and will add equipment for the manufacture of roofing specialties.

The Central Electric Producing Co., Athens, Ohio, has completed an addition to its electric producing plant and expects to install further equipment.

The Banner Machine Co., Columbiana, Ohio, has finished the construction of a new one-story brick machine shop, 24 x 1500 ft., with an engine boiler room, 45 x 75 ft., adjoining. A new foundry, 24 x 75 ft., has also been completed. Equipment is being installed in both buildings.

The Central South

LOUISVILLE, Nov. 5.

Machinery and tools are becoming more difficult to obtain, especially for the manufacture of farm implements. The coal shortage continues. Skilled labor is not up to the demand, though common labor is becoming more plentiful.

Fire on Nov. 3 destroyed the plant of the Owensboro Ice Co. including the boiler room, with a loss of $25,000 to $30,000.

The Grapevine Coal Co., Madisonville, Ky., is asking for prices of two geared hoisting engines to lift a load of 8000 lb. 130 ft.

The Powells Non-Elevating Harvester Co., Alamo, Tenn., has been incorporated with a capital stock of $100,000 to manufacture farming implements. The incorporators are O. H. Powell, Jr., J. H. Agnew, H. E. Hardison and others.

The W. G. Simmons Co., Memphis, Tenn., is in the market for a 1 to 2-ton second-hand alternating current electric driven hoist, 220-volt, 60-cycle, and for a 100-hp. portable boiler in good condition.

The Domestic Ridgley Light & Ice Co., Ridgley, Tenn., has been incorporated with a capital stock of $10,000 by G. S. Ridley, J. T. Foster, G. F. Richardson and others to establish a light and ice plant.

St. Louis

ST. LOUIS, Nov. 5.

The St. Louis Chamber of Commerce, St. Louis, has taken initial steps for the organization and establishment of a $3,000,000 shipbuilding corporation to be devoted chiefly to the construction of barges, tugboats, etc., but which will also be equipped to build war vessels of light draft and other boats. The plans follow the recent development in the possibilities of ore and coal transportation on the Mississippi River and the availability of locations for the construction of ships.

The Kansas City Light & Power Co., Kansas City, Mo., is preparing plans for a new power house about 1½ miles down the river which will have an ultimate capacity of 250,000 kw., and has completed plans for the installation of 40,000 kw. The equipment includes two 20,000-kw. General Electric turbines, two Worthington condensers, six Babcock & Wilcox boilers, six Sanford-Riley 16 retort underfeed stokers, six low-pressure Green fuel economizers and minor equipment.

The Mazda Electric Mfg. Co., St. Louis, has been incorporated with a capital stock of $20,000 by J. M. McKerna, J. W. Hutchinson and others, to manufacture electric devices.

The Truck, Tractor & Mfg. Co., St. Louis, has been incorporated with a capital stock of $25,000 by Isidor M. Jacobs, Kansas City, Mo.; Norris B. Gregg, Jr., and others of St. Louis, to manufacture motors, trucks, tractors, etc.

The Dirigible Auto Light Co., St. Joseph, Mo., has been incorporated with a capital stock of $25,000 to manufacture lighting and signal devices. The stockholders are C. G. Crandall, Eugene H. Bullock and Joseph L. McDonald.

The Rosa Gin Co., Rosa, Ark., incorporated with a capital stock of $175,000, is in the market for about $14,500 worth of equipment. J. C. Spann is president.

The East Point Gin Co., East Point, La., J. C. Marston manager, whose gin was recently burned with a loss of $25,000 on equipment will be rebuilt.

Junkin Bros., Vidalia, La., will re-equip a gin recently burned requiring about $8,000 worth of machinery.

The Planters Gin Co., Vian, Okla., will rebuild its burned cotton gin, and is in the market for about $10,000 worth of machinery.

Charleston, Miss., J. M. O'Neal commissioner, will install alternators and other equipment in its electric light plant, opening bids Nov. 20 for oil engines, pumps, and other machinery.

The Lawton Gas & Electric Co., Lawton, Okla., has been incorporated with a capital stock of $300,000 by John C. Keys, J. M. Young and A. H. Keys and will equip an electric light and power plant.

The Dixie Engineering Co., Enid, Okla., will equip a plant for the manufacture of feed mills and other machinery.

The Tropic Ice Machine Co., Oklahoma City, Okla., has been incorporated with a capital stock of $100,000 by E. E. Gainer and H. C. Kee, Oklahoma City, and E. J. Green, Enid, Okla., to manufacture ice making and refrigerating machinery.

The Modern Refining Co., Blackwell, Okla., incorporated with a capital of $250,000, J. W. Squires, engineer, Hotel Denton, Blackwell, will equip a pipe line and install a 1200-bbl. pumping station.

Gulfport, Miss., will install equipment for a garbage incinerator at a cost of about $50,000. The mayor is in charge.

The Universal Signal Co., St. Louis, has been incorporated with a capital stock of $27,000 by George A. Czibulka, A. C. Wirth and others, to manufacture automobile signals.

Waurika, Okla., will install about $20,000 worth of waterworks plant equipment. W. H. Divers, mayor.

The Portland Lead & Zinc Co., Miami, Okla., Edward Nix manager, is receiving bids for four 100-hp. steam boilers, one 200-hp. Corliss engine, 18-in. crushers and rolls, one 200-hp. gas engine and other machinery.

The White-Blakeslee Mfg. Co., Woodlawn, Ala., manufacturer of gasoline engines and veneer machinery, has been purchased by D. B. Dimock, president American Casting Co., Birmingham, and will be operated as a branch plant under the name of the American-Blakeslee Mfg. Co.

Texas

AUSTIN, Nov. 3.

The machinery and tool trades in this section and Mexico show increased activity. An unusual number of industrial plants are in course of construction and being planned. Conditions, in Mexico continue to improve and large orders are being placed for mining machinery and other mechanical equipment.

The Lampasas Light & Power Co., Lampasas, will install additional machinery and equipment.

The Keith Lumber Co., Voith, plans to build one or more additional hardwood lumber mills upon the Neches River to utilize about 3,000,000,000 ft. of timber that it owns near Voth.

The La Blanca Sugar Co., recently incorporated under the laws of Delaware with a capital stock of $500,000, plans to build a sugar mill near Donna in addition to the two mills it has purchased. It also has under consideration the construction of a sugar refinery at some point in the lower Rio Grande valley. J. C. McDowell, Pittsburgh, Pa., is president.

The Texas Wheel & Body Co., Dallas, has been incorporated with a capital stock of $10,000 to manufacture wheels and bodies for vehicles.

The Jefferson Ice & Light Co., Jefferson, plans to install a new electric motor and other equipment in its plant.

B. B. Stevens, Cooksville, will build an electric light and power plant.

Announcement is made by the Sinclair-Gulf Oil Corporation that it will immediately begin the construction of its refinery at Houston and the laying of a pipe line from the Oklahoma fields to the site of the proposed new plant. The total cost, it is stated, will be $11,000,000.

The City Ice & Fuel Co., San Antonio, has been incorporated with a capital stock of $50,000 and will build an ice factory. J. P. Wilhelm is a stockholder.

California

SAN FRANCISCO, Oct. 30.

The increasing difficulty in securing delivery on marine engines and parts from the East and the scarcity of skilled labor has led to a steady demand for machine tools and a number of jobbing houses are installing equipment for making parts. Machine tools for manufacturing nuts and bolts are also in demand. An acute scarcity of large lathes is noted, which cannot be had on less than eight months' delivery. Small lathes are in oversupply. Government work continues to absorb the attention of the larger shops, largely to the exclusion of private customers.

The Moore & Scott Iron Works, Oakland, will erect a one-story steel and wood machine shop at the foot of Adeline Street to cost $65,000.

The Turbine Muffler Mfg. Co., Carson, Nev., has been incorporated in San Francisco with a capital stock of $50,000 to manufacture automobile parts. The directors are R. C. Savage, J. G. Ellis, William Muller, Joseph Smythe and P. B. Ellis of Carson City.

The Dalton Iron Works, Goldfield, Nev., has been incorporated with a capital stock of $500,000 by H. V. Morehouse, Augustus Tilden and Marjorie Tilden.

The Skandia-Pacific Oil Engine Co., Oakland, has completed a machine shop, 75 x 175 ft. and will install automatic tools and machinery to double its present capacity.

The Byron Jackson Iron Works, San Francisco, is equipping a new pump factory at Berkeley, Cal., which will increase its capacity about 50 per cent.

The United States Aircraft Corporation, San Francisco, has bought the plant of the Christopherson Aircraft Co., Redwood City, Cal., and will double the capacity.

L. C. Wills, formerly of the C. A. Green Co., ship chandlers, Tampa, Fla., has bought the interests of O. S. and B. P. Weston in the Marine Equipment Co., Los Angeles, of which he becomes president. The company will enlarge its boat building plant.

The Scovel Iron Stores Co., San Francisco, has increased its capital stock from $100,000 to $250,000.

A. J. Woolsey, Oakland, has leased 25 acres on the water front and, it is understood, a shipbuilding plant will be erected.

The Cannonball Motor Co., Texico, N. M., recently incorporated, announces plans for the erection of a factory to manufacture automobiles, farm tractors, trucks and parts.

The Pacific Northwest

SEATTLE, WASH., Oct. 30.

The Boeing Aeroplane Co., Seattle, has contracts from the Navy Department valued at $575,000. It will make improvements including a two-story machine shop, 84 x 88 ft., and office building.

Oregon Box & Manufacturing Co., Portland, Ore., plan erection of a sawmill, costing $5,000; main building to be 40 x 200 ft.

An agreement has recently been reached with the striking shipbuilders in Astoria, Ore., whereby all the men have returned to work, and every shipbuilding plant in the city is operating to capacity.

The Thurston County Dairy Products Association of Olympia, Wash., will erect a 40 x 140 ft. one-story dairy plant at Camp Lewis; structure will cost $10,000 and machinery to be installed will cost $5,000 additional.

The St. Paul & Tacoma Lumber Co., Tacoma, Wash., will erect a sawmill on the tideflats, to furnish shipyard timbers. Plant will cost $80,000.

The Clyde Casting Co., Seattle, whose plant was recently destroyed by fire, will rebuild to have a capacity 30 per cent greater than old plant, and will turn out 6000 lb. of casting per day.

The Pioneer Paper Co., Seattle, has been incorporated with a capital of $75,000 by H. N. Richmond, L. L. Beberage and J. P. Reynolds.

The Wonder Pump & Engine Co., Standard Bank Building, Vancouver, B. C., has been organized with $25,000 capital.

The Grant Smith-Guthrie-McDougall Shipbuilding Co., Portland, Ore., contemplate the construction of a plant, adjoining its St. Johns shipyard, for the equipment of vessels constructed in its yards.

The North Bend Iron Works, North Bend, Ore., is erecting a building to house its ironworking plant. Some new equipment will be added.

The Skinner & Eddy Shipbuilding Corporation, Seattle, is completing plans for extensions which include a foundry, 60 x 150 ft., adjoining the third machine shop now under construction; new shipway, power house and punch shop equipped with six machines. When completed the improvements will cost $1,000,000 and the plant will represent an expenditure of more than $4,000,000.

Puget Sound Machinery Depot, Seattle, has purchased land on which it will erect a plant to cost $1,000,000. It manufactures boilers, boiler parts, shafting and patterns for ship machinery, and has contracts on hand to keep the plant operating for two years.

Canada

TORONTO, Ont., Nov. 5.

The Dominion Steel Products Co., Brantford, Ont., has secured a contract for the construction of heavy machinery for about 100 merchant ships being built throughout the United States, which will involve the extension of its plant. Land has been acquired and new equipment will be purchased.

The Alloy Steel Works, Ltd., Toronto, has been incorporated with a capital stock of $2,000,000 by Reginald H. Parmenter, 85 Bay Street; Arthur J. Thomson, Samuel D. Fowler and others, to manufacture iron, steel, tools, machinery, implements, etc.

The Gould Rotary Sewing Machines, Ltd., Toronto, has been incorporated with a capital stock of $350,000 by Frank Regan, 72 Queen Street West; Edward Murphy, Glen Sullivan and others, to manufacture sewing machines, tools, parts, accessories, etc.

The National Index Card Co., Ltd., Toronto, has been incorporated with a capital stock of $50,000 by Joseph H. Saunders, 53 Waverly Road; Harold J. King, 60 Neville Park Boulevard; James F. Osborne and others, to manufacture filing cabinets, office equipment, furniture, etc.

The Heating Specialty Co., Ltd., Toronto, has been incorporated with a capital stock of $50,000 by James Parrish, William A. Ross, Harry W. Page, 12 Richmond Street East, and others, to manufacture stoves, grates, furnaces, boilers, gas and electric heaters, etc.

The Railway & Power Engineering Corporation, Ltd., Toronto, has been incorporated with a capital stock of $50,000 by Theodore Malm, 55 Kingswood Road; Gerard Ruel, 12 Isabella Street; Frederick C. Allen and others, to manufacture machinery, tools, etc.

The Montreal Shipbuilders, Ltd., Montreal, has been incorporated with a capital stock of $300,000 by Errol M. Macdougall, Sadi C. Demers, Leslie G. Bell and others, to build drydocks, vessels, boilers, etc.

H. W. Petrie, Lister Building, Hamilton, Ont., is in the market for 5 and 10-hp. water motors.

S. E. Landry, Vancouver, B. C., is arranging for the establishment of a shipbuilding plant at Prince Rupert, B. C., which will be a branch of the Eastern Canadian Co., at present constructing vessels for the British Government.

Bienville, Que., C. Lessard, 493½ St. Valier Street, engineer, will soon call for bids for turbine pumps for its water works plant.

The Water Commission, Sault Ste. Marie, Ont., will build a pump house and install equipment to cost $15,000. W. Every is manager of the commission.

The Town Council, Strathroy, Ont., is calling for tenders for the construction of a pump house and is in the market for a turbine pump. Kerry & Chace, Confederation Life Building, Toronto, are the engineers.

The Gray Marine Motor Co., Bridgewater, N. S., is arranging for the erection of a plant to manufacture engines, boilers, machinery, etc.

The Comeau Shipbuilding Co., Ltd., Comeauville, N. S., proposes to build a shipbuilding plant to cost $100,000. E. D. Comeau is secretary-treasurer.

James Wilson & Sons, St. Andrews Street, Fergus, Ont., will build a sawmill at a cost of $50,000 and will require machinery and equipment.

The Canadian Steel Foundries, 120 St. James Street, Montreal, will build a one-story frame factory to cost $6,000.

The Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N. S., will build additions to its plant, make repairs and install equipment to cost $4,000,000. F. H. Crockard is general manager.

The Acadian Shipbuilding Co., Ltd., Saulnierville, N. S., will build a shipbuilding plant to cost about $75,000. Denis D'Entremont, Meteghan River, is secretary-treasurer.

The Dussault Co., Levis, Que., has completed plans and will start work at an early date on the erection of a machine shop at St. Romauld, Que., to cost $50,000. M. J. Et. Dussault, Wolfe Street, Levis, is president.

Prospects for Machine-Tool Exports

(Continued from page 1117)

the freight rates, which will necessarily be high from America.

"They have also commenced to form various combinations for the sale of their tools, not only in Belgium but in other countries, and are prepared for a very active and extensive campaign for the Belgian market. After the war they will specialize a good deal more than they have done in the past, and they will, therefore, be in a position to compete very much more favorably than they have done heretofore.

"The Swedish manufacturers, I do not think, will bother to any extent the American manufacturers, as before the war they did not make a very great variety of machine tools, and most of these were of the cheaper class.

Prospects for After-War Trade

"There are two more items, to my mind, that enter into the prospects for the exporting of American tools to Belgium after the war; one being the question on the part of the American manufacturers as to whether the Belgian manufacturers will be able to pay for their goods, and the other on the side of the Belgian manufacturers as to whether the American manufacturers will be able to obtain anything like reasonable freight rates for the shipping of their goods from America to Belgium.

"Dealing with the first item, I think I have already explained earlier that certain Belgian manufacturers have already put up the necessary cash for payment of their goods, and it may interest you gentlemen to know that all the gold which was held at the National Bank in Brussels has been saved, as well as the gold in a good many other banks, and this is now deposited in the Bank of England in London, so that the Germans did not obtain any great amount of gold when they overran Belgium. This will, therefore, again be put in circulation, and it remains to be seen as to whether it is enough to make the Belgians' credit as good as ever.

"Another point in regard to the question of finance is that a lot of the large Belgian firms have sister firms operating either in France or other countries, and they will no doubt help to restore their plants in Belgium. I know for a fact that one firm in France has already set aside the sum of three million francs for the re-equipment of their plant in Belgium.

"Again, the Belgians are also a commercial race as well as industrial, and owing to their own country being so small they had to seek investments outside for their money, and they own the controlling interests, or very large ones, in various railroads and trolley lines in South America and the Far East. They also have their colony in the Congo, which is a very rich and valuable one to them, and the companies operating there have made large profits during the war.

"I learn on good authority that should credits be necessary to the Belgian manufacturers after the war plans are already afoot and likely to be consummated at any time by which the American bankers will give their correspondents in Belgium credits such as they did before the war, and the Belgian bankers in turn will give certain first-class responsible Belgian firms all the credit they require, so that it will become practically a cash against bill-of-lading proposition in New York for the American manufacturers for these firms. There will still remain certain Belgian manufacturers who will not be able to benefit by any of the foregoing advantages, and who will expect to receive facilities of payment for their machines from the American manufacturers, which in most cases will be the manufacturers' agents in Belgium. American manufacturers must therefore be prepared to assist their agents immediately after the war, in certain cases, by extending them this credit, and if necessary obtain help from their banks until conditions again settle down to normal.

"I do not think that any agent will have the necessary funds at his disposal to take care of the huge orders which they will receive just prior to peace and for several months after.

Shipping Problem a Serious Factor

"The shipping problem, however, is one that is up to the American manufacturer and I think should seriously be considered. Before the war the freight rate from England to Belgium was about $1.25 to $1.50 per gross ton, and from America to Belgium about $2.50 per gross ton, and the difference was practically negligible on the cost of the machines. Just compare these figures, gentlemen, with the freight rates of to-day. After the war if you do not find some means of combating the freight rates, I am afraid it will be very difficult for you to compete seriously against the English manufacturers, as each European nation will probably control its own shipping for a certain period after peace has been declared. You will therefore not be able to depend on British steamers to carry your goods as they did in the past until conditions again become normal. I do not doubt, though, that you manufacturers will be able to solve this problem just as successfully as you have solved others which have arisen from time to time. It is needless to say that the obvious solution of this uncertainty is for you Americans to have your own merchant marine operating on the same economic basis as that of other countries, thereby controlling your own freight rates.

"Tools of all descriptions will be in great demand after the war, and the Belgians will of necessity have to purchase more labor-saving machinery than they have done in the past, as labor will be scarce in this country as in all others after the war, but there are a certain class of tools which are possibly in more demand in the Belgian market than any other country and to which the American manufacturer has not yet devoted enough attention. I refer to heavy railroad tools. There were no less than 19 railroad shops in Belgium before the war which were producing locomotives for all parts of the world, and most of the tools required for the production of these machines were supplied by Germany, who made very costly and intricate tools which were not at all well received by the workmen. The others were supplied mostly from England also; some were manufactured in Belgium, but these were not of a very modern design. Some of the railroad tools required in Belgium are of a special nature as compared with the tools used in this country. For example, in Belgium for freight car wheels cast steel centers are used with forged steel flanges shrunk on to these, and not cast-iron wheels as are used in this country. You will, therefore, see that the tools must be made to perform more operations than here and also be of a heavier construction to work on the steel material. I would strongly draw your attention to this fact, gentlemen, as boring machines, axle lathes, slotting machines, wheel-turning lathes, etc., for this heavy type of work will be in very great demand.

"A certain number of new firms will naturally spring up in Belgium after the war for the manufacture of machine tools, but I do not think you need give them any great consideration, as they will not be in shape to compete very seriously for some time until they have their own shops equipped and working, and before this time comes most of the orders for the re-equipping of shops will have been placed.

Appointing of Belgian Agents

"Regarding the appointing of agents in Belgium, I would like to offer one or two suggestions. Certain manufacturers think of sending over their own representatives and being directly represented in that country, and not using established agencies, which, of course, is a good idea where the volume of business is sufficient. I would, however, warn these gentlemen not to send over, as certain firms have done in the past, highly trained men who cannot speak the French language, as Belgian manufacturers have not the time to spend in receiving them and having their views interpreted for them by a third party. Of course, Belgian manufacturers always feel honored by a visit of any officials of American manufacturers who are represented by Belgian firms. Should you decide to intrust

your agency to a firm operating in France, be sure that they will establish themselves in Belgium, as it does not follow that a firm working successfully in France are the best people to represent you in Belgium. Also you cannot succeed in Belgium without being established there. Except for the same language being spoken in the two countries their customs andd ways of doing business are entirely different. Close co-operation will be needed between the American manufacturer and his agent. Fortunately this feeling was developed by most of the large firms before the war. You should all heed the old motto, 'United we stand, divided we fall.'

"To my mind the best agents for Belgium, or any other country, are those who specialize and devote all their time and energy in the country where they have the agency, just the same as American tool manufacturers have confined themselves and specialized in their branches of tools, which has made them so successful and enabled them to bring out the most efficient machines.

"In conclusion, I would like to state that there should be a very rosy future for American machine tools in Belgium after the war, as I read a report just recently published in which the Belgian Government estimates that $400,000,000 worth of tools, machinery and raw materials have been taken out of that country by the Germans. American tools will be looked upon with a good deal of favor by the Belgians, as they will always appreciate and feel very warmly disposed toward you, not only on account of the very good tools you manufacture, but also due to the very excellent and liberal manner in which you have contributed to their relief and kept that poor nation from starving."

South American Conditions

South American conditions and prospects were discussed by G. E. Briggs, commercial attache National City Bank, New York, in part as follows:

"As markets for machine tools, the South American countries present different aspects. Some are more highly industrially developed than others, and give promise of still further progress along this line, and therefore offer much more promise than certain other countries, which can never, in any sense of the word, become industrial.

"The Argentine, for example, is a purely cattle and agricultural country. Raw materials for a metal-working industry, generally speaking, do not exist in the country, and in the few cases where mines have been found they are so far from the coast as to render uneconomical their exploitation. There is a considerable importation of machine tools, however, into this country, for use in the Government and railroad shops, and in the small industries that exist.

"The Government maintains shops in connection with its marine and Department of Public Works, and is occasionally in the market for machine tools. Purchases are made almost exclusively from local importers who carry a stock of machinery and are in a position to make immediate delivery. It is their custom to call for competitive bids from these importers. It is necessary, therefore, to approach the Government by first selling one of these importing houses.

English Capitalists Own Railroads

"Seventy-five per cent of the railroad mileage of the Argentine is owned by English capital, 14 per cent by the State and 11 per cent by French companies. The so-called English railroads purchase all their supplies through their London offices, and it is only in very exceptional cases that purchases are made in the Argentine. The French railroads purchase most of their supplies in Paris, it is true, but obtain a much larger proportion of their requirements in the Argentine than do the English roads. The State railroads purchase from local importers, on competitive bids, as do the other departments of the Government.

"The metal-working industries are permitted to exist through the protection of the Argentine tariff. The principal products are bolts, nuts, screws, wire nails, brass and iron beds and springs. In addition to the establishments which constitute these industries there are many other machine shops engaged almost exclusively in repair business and the manufacture of repair parts.

"It is generally estimated that prior to the outbreak of the war 75 per cent of the machine tools imported, exclusive of those for the use of the English railroads, were of German manufacture. The German manufacturer, through giving the utmost consideration to the requirements of the market, had succeeded in practically displacing the English machine from the market. The German manufacturer exported to that market a medium-priced machine, of medium quality, admirably suited to the needs of the Argentine industry. Cost of equipment is the chief consideration in the estimation of the Argentine industrial. As I have stated, the establishments, with but few exceptions, are small, and do rough work which does not require the use of a high-class machine.

"As an example of the manner in which the Germans have adapted their machines to the varied uses of the small industrial I might mention the fact that in almost every case the German lathe is manufactured with a deep gap in the bed, and is in this way able to work an 80-cm. diameter, whereas a lathe of the same size, without the gap, would admit a diameter with only 30 cm. This is typical of many adaptations that the Germans have made. The construction of the German machines, furthermore, is made as simple as possible. The Argentine is a poor mechanic, and the intricate precision machine is liable to suffer at his hands.

American Tools in Railroad Shops

"The majority of the American tools in the Argentine are in the shops of the English railroads and have been purchased by the London offices of those railroads from the English offices of the American manufacturers. The most careful mechanical work is done in these shops, and the necessity of having exact high-production machines is realized. Only a few American machines are in the Government shops, and still fewer in the smaller industries.

"Although the Argentine does not present as attractive a potential market for American machine tools as do certain other South American countries, the possible business is of considerable importance. There has been a shortage of certain types of machines in the market during the last three years, and importers have sent many orders to the United States. The few machines that have been received have been, generally speaking, sold to good advantage in spite of the higher price. Had more attention been given to those orders the superior value of American tools might have been demonstrated to industrials, in general, in the Argentine, and, with the continued interest of American tool builders in that market a large share of the business could have been retained. In general, it may be stated that the Argentine demands a medium-priced and medium-quality machine.

Brazilian Products More Varied

"The products of the Brazilian industry are more varied than are those of the Argentine. Even a few locomotives have been manufactured in the railroad shops. As a rule, however, the work is limited to locomotive and rolling stock parts, in general, and to the manufacture of certain small lines in private industry. English and French capitalists are also prominent in railway ownership in Brazil, but a much larger proportion of the requirements of the roads is filled in the country.

"English and American machine tools have always been the standard of the market in Brazil, but during the few years immediately preceding the outbreak of the European War, German firms encroached to a considerable extent on this business. A special advantage presented by the Brazilian market in the eyes of the North American builder is the recognition of the superior merits of the American machine, and the willingness to pay the extra price.

"A still more favorable market exists in Chile. The principal users of machine tools are the Government,

and when I mention the Government I include also the railroads, which are all state owned, and the mines. The Government shops are largely equipped with American machine tools at the present time, and as an item of added interest I might mention the fact that a great establishment is now being built there by an American concern, to construct locomotives for the State Roads. The Chilian Government and Administration of Railroads usually buy their supplies through houses in Chile. Occasionally, however, at a time like the present, when they are encountering the greatest of difficulty in obtaining supplies, they send a commission to an European or to the American market. Shortly before I left Chile a purchasing agent of the State Roads came to the United States to buy supplies of all kinds. It was said at that time that this man would undoubtedly be high up in the administration of the railroads upon his return, and it is to be hoped that his experience in the States will incline him favorably toward American goods. Shortly thereafter a commission of five or six young men came from Chile to the United States to study the American railroad system. They intend to spend two years in this country, and it is expected that they will be the ones to dictate the Chilian railroad policy of the future. With these favorable influences the Chilian Government should be a very good customer for American machine tools.

Copper Mining Interests Big Buyers

"The American copper mining interests have invested in the neighborhood of $150,000,000 in Chile. Their machine tool requirements are entirely filled in the United States. In the case of these companies, however, the purchases are usually made by their head offices direct from the manufacturers in this country.

"I would also like to bring to your attention the fact that Chile may be an industrial country in the future. The time may come when the world, seeking economies in manufacture, will incline toward establishing manufacturing plants as near as possible to the sources of production of raw material. Chile, one of the world's greatest copper producers, and, furthermore, rich in minerals of all other kinds, would, under these conditions be one of the selected fields of industrial activity.

Plan for Capturing the Trade

"I would suggest the following plan of sales organization as the best adapted to the requirements of machine tool builders: The co-operation of a number of non-competitive firms in establishing a representative in South America to work through an importer in each market appointed the exclusive agent for that territory. These houses will carry stock and attend to the orders for the small industrials and shops and others who buy stock in the market. The representative will travel from one market to another, co-operating with the agents and seeing that the attention of the agent to this line is not allowed to flag, and dedicate himself especially to the larger business, acquainting his principals with the opportunity to sell large buyers, who make their purchases in other markets. Such an organization should be built up at the present time in order that the foundation may be well laid and the American business house may be in a position to meet the keenest competition that the world has ever seen on as near an even footing with his competitors as possible."

Builders Hear Mr. Merryweather

At the closing session of the annual convention of the machine tool builders, they listened to an address by G. E. Merryweather, who was recently appointed head of the Machine Tool Section of the War Industries Board. Mr. Merryweather's remarks were not given out for publication, but they had to do in a general way with the progress of his work in conserving machine tools for war purposes, stimulating increased production, priority matters, commandeering and other subjects associated with Government purchasing.

Resolutions of condolence were reported by special committees on the death of Albert S. Smith, president, Smith & Mills Co., Cincinnati, and Paul Kendig, formerly connected with the Seneca Falls Mfg. Co., Seneca Falls, N. Y.

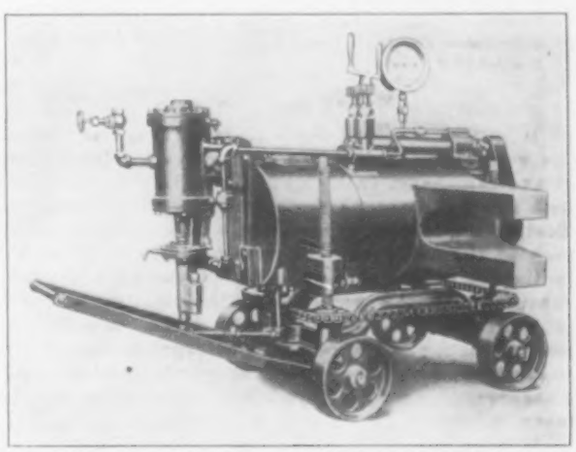
Present officers of the association were re-elected for the coming year as follows:

President, J. B. Doan, the American Tool Works Co., Cincinnati; first vice-president, D. M. Wright, the Henry & Wright Mfg. Co., Hartford, Conn.; second vice-president, August H. Tuechter, the Cincinnati Bickford Tool Co., Cincinnati; treasurer, A. E. Newton, Reed-Prentice Co., Worcester, Mass.; secretary, Charles L. Taylor, the Taylor & Fenn Co., Hartford, Conn.; general manager, Charles E. Hildreth, Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass.

Portable Crankpin Forcing Press

A new type of portable press for forcing crankpins into locomotive and engine wheels and for miscellaneous shop and field work has been placed on the market by the Watson-Stillman Co., 190 Fulton Street, New York. A pump driven by an air engine is substituted for the hand pump formerly employed. This change aside from reducing the number of men required by one, also, it is stated, increases the speed of operation approximately 300 per cent.

A steel cylinder with heavy cast forks on the side that support tierods forms the main portion of the press. The reservoir is mounted at the rear of the press and the ram operates from the front of the cylinder casting. The pressure for operating the ram is supplied by a power-driven pump operated by compressed air. When it is desired to operate the pump, a connection is made through a rubber hose or other flexible tube between the compressed air line in the shop and the pump engine in the same way that pneumatic tools are connected up. The operating valves are located so that the man in charge can operate the press as well as direct the work of the crew. The whole unit is carried on screws that are mounted on a flat wheel truck and by turning one of the screws the center line of the ram can be raised or lowered to coincide with that of the pin. Two tierods and an abutment beam are used in connection with the press, the distance between the former being adjustable in the forks on the cylinder so that the rods may be passed between the spokes of a wheel or any other convenient opening in the work.



An Engine Supplied from the Shop Compressed Air Line Is Employed to Drive the Hydraulic Pump in a New Portable Crankpin Forcing Press, thus Eliminating the Hand Pump Operator Formerly Required

The ram is returned by a small hydraulic cylinder mounted on the top of the press, the piston of which is connected to a lug on the end of the ram. A geared screw stem valve is provided to control all the movements of the ram. The presses, which are built in capacities ranging up to 300 tons, are equipped with a gage which indicates the pressure required to sink the pin. This arrangement, it is emphasized, makes the detection of a loose fit which might cause a serious accident an easy matter.

Skilled Men Drafted for War Duty

(*Continued from page* 1118)

3. Man with brothers or sisters incompetent to support themselves, dependent on daily labor for support.
4. County or municipal officer.
5. Firemen or policemen.
6. Necessary artificers or workmen in arsenals, armories and navy yards.
7. Necessary custom house clerk.
8. Persons necessary in transmission of mails.
9. Necessary employees in service of United States.
10. Highly specialized administrative experts.
11. Technical or mechanical experts in industrial enterprise.
12. Highly specialized agricultural expert in agricultural bureau of State or Nation.
13. Assistant or associate manager of necessary industrial enterprise.
14. Assistant or associate manager of necessary agricultural enterprise.

CLASS IV.

1. Married man with wife (and) or children (or widower with children) dependent on daily labor for support and no other reasonably adequate support available.
2. Mariners in sea service or merchants or citizens in United States.
3. Heads of necessary industrial enterprises.
4. Heads of necessary agricultural enterprises.

CLASS V.

1. Officers of States or the United States.
2. Regularly or duly ordained ministers.
3 Students of divinity.
4. Persons in military or naval service.
5. Aliens.
6. Alien enemies.
7. Persons morally unfit.
8. Persons physically, permanently, or mentally unfit.
9. Licensed pilots.

Method of Procedure

It is the intent of the War Department to call all the men of Class I before any are called from Class II and to exhaust each class in turn before proceeding with the next class. Although no data are available indicating the number of men that will be included within each of the five groups, it is believed that the second contingent will be obtained before Classes I and II are exhausted. If this proves to be the case, no workmen in arsenals, armories and navy yards, technical or mechanical experts in industrial enterprises, highly specialized administrative experts or assistant or associate managers of necessary industrial enterprises will be taken.

It is understood that the new classification will not operate to prevent exemptions from the call for such reasons as were recognized in connection with the first draft, but obviously it will greatly reduce the number of exemptions for the reason that practically all classes entitled to be relieved from the obligation of service under the original regulations are so grouped in the new classification that they will not be summoned on the next call. Thus no married men with dependent wives or children will be called until Class IV is reached and it is quite possible that the second and even the third contingent for the national army may be selected before the first three classes are exhausted.

The labor situation as affected by the next draft is likely to be improved to some extent by legislation which the War Department will seek at the coming session of Congress. The selective draft law made no provision for the registration of young men coming of age after the date of the first call and such persons cannot now be legally registered or forced into the service. Congress will be asked to pass a measure, probably in the form of a joint resolution, requiring all young men to register as soon as they become of age throughout the period of the war and thus the registration lists will be steadily augmented to a very substantial extent. The average number of skilled workmen among these very young men will probably be less than among the older men and as the registration recruits will take their places automatically in their respective classes, the prospect for the drafting of skilled labor will proportionately decrease.

W. L. C.

Rating Rolling Mill Motors

In discussing the paper on electric power in steel plants presented before the American Iron and Steel Institute at Cincinnati, Oct. 26, by S. S. Wales, electrical engineer, Carnegie Steel Co., Pittsburgh, some views of the requirements to be met by rolling mill motors were given by K. A. Pauly, power and mining engineering department, General Electric Co., Schenectady, N. Y., in part as follows:

Compounding the roll motor, as agreed to by Mr. Wales, in no way relieves the mill or motor of the mechanical shocks. When the ingot hits the rolls, the roll motors slow down until the combined work delivered by the motor armatures in slowing down and the torque developed by these motors is sufficient to carry the steel through the rolls. The stored energy in the armature acts instantly and delivers the initial blow, whether the motor is shunt or compound wound.

Compounding reduces the overloads on the electrical equipment, but does so at the expense of production as it slows down the rolls while the piece is being rolled. We must appreciate that rolling mill conditions are extremely severe, and if the equipment is designed to withstand the overloads and mechanical vibrations incident to rolling, there will be no need for compounding the roll motors.

Rolling mill motors should be rated by their continuous capacities, which is a measure of their ability to produce tonnage, and by their maximum overload capacity, which is a measure of their ability to withstand the high momentary overloads of the individual passes. No rolling mill equipment is properly defined without the specification of these capacities. Altogether too much emphasis has been placed on the maximum capacity, and any such rating for these motors which includes only the maximum horsepower without a time or speed qualification is not only contrary to the recommendations of the American Institute of Electrical Engineers but extremely misleading and flexible, and no purchaser is safe in assuming that specifying the maximum horsepower at any given speed, or series of speeds, alone protects him against obtaining an equipment inadequate to meet his requirements.

For this reason we have always insisted on giving, for various speeds, the continuous ratings of our reversing mill equipments, together with their maximum capacities and emergency overload capacities to take care of unusual peak loads. It is very gratifying to us to find that most of the engineers of the larger steel companies appreciate the importance of doing this and in purchasing their equipments insist on curves giving the continuous as well as the maximum load capacities.

War Service Committee of the Fabricating Trade

Representing the steel fabricating interests and appointed by the Bridge Builders and Structural Society and the similar organization operating in the West, the following war service committee has been appointed to collaborate with the advisory commission of the Council of National Defense: John Sterling Deans, Phoenix Iron Works, chairman, and Lewis D. Rights, Lewis F. Shoemaker & Co., secretary; Thomas Earle, Bethlehem Steel Co.; H. A. Fitch, president Kansas City Structural Co.; J. F. Kimbrough, president Indiana Bridge Co.; C. D. Marshall, McClintic-Marshall Co., and H. A. Wagner, president Wisconsin Bridge Co. This committee constitutes one of the war service committees which are being rapidly brought into being to take the places of the various raw material subcommittees of the advisory commission of the Council of National Defense, which subcommittees are to go out of existence because of the ruling against committees of sellers being substantially a part of a board placing orders.

The Russian Government, represented in Seattle by A. Pevzoff, who has opened permanent headquarters at 327 Railway Exchange Bldg., Seattle, has leased a tract of 35 acres near Georgetown, Wash., which will be used for assembling and storage yards for 1500 locomotives and 30,000 box cars, for use in rehabilitating the Trans-Siberian and Russian Railway systems.

Widening Fields for Malleable Iron

(*Continued from page* 1121)

iron. He has truly said that steel will never entirely replace malleable iron for a multitude of articles and it might further be said that many competent engineers are of the opinion that in numerous instances substitutions of steel for malleable have been made that were not justified and that as malleable iron becomes more thoroughly understood and appreciated, it will eventually find its proper place wherever such substitutions have occurred. In time, of course, scientific design will take the place of guess work in the determination of these matters and when that day comes, malleable will be in far more general use than it is to-day.

"The scope of Mr. Pope's paper being so essentially broad, it was, of course, impracticable for him to discuss in detail the multi-various uses of this product, hence it may not be inappropriate to refer more in detail and yet briefly to one of the particular uses of malleable iron which he mentioned. I refer to the automobile, the development of which has opened a very broad field for all kinds of steel and iron. In this great industry, the most brillant engineering talent has been developed, so that while malleable iron is very largely used in motor car construction, it is probably more intelligently and scientifically employed in this field than in any other, due, of course, to the exact science which the building of automobiles has already attained. Some one has probably said ere this 'Where is there much malleable iron used on an automobile?' The question might be answered by asking where it is not used? The wheels, whether wood or metal, have malleable hubs; the steering gear, transmission, rear axle, springs, body, lamps, wind shield, magneto and self starter are generally supplied with malleable iron parts, not to mention the thousand and one accessories, such as license brackets, wrenches and tools innumerable. May it not be profitable to consider for a moment why malleable iron is so largely used in this industry? We will find that among the reasons are its general adaptability and great strength in proportion to area, easy machining qualities and, last but not least, intelligent and scientific designs. In the most popular car made in the country to-day, there are about 100 parts made of malleable iron while in the higher priced cars there are about the same number.

Importance of Inspection

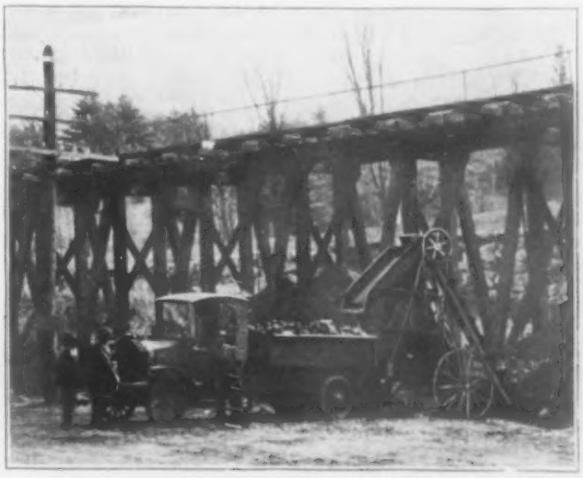
"Mr. Pope has spoken of the importance of inspection and too much stress cannot be laid on this point. Here again most industries can learn something from the automobile manufacturer. Practically all the large motor companies not only employ a corps of competent inspectors but they have established chemical and physical laboratories where scientific study is given to the characteristics of all materials used in the construction of the car. It is not unusual now for a foundry to have a defective casting returned accompanied by a chemical analysis of the product and an opinion concerning the methods employed by the foundry. While some of these opinions may not harmonize with the views of the foundryman, the practice has a tendency to keep him alert and if other lines would take as much pains to relate cause and effect, there would be less of arbitrary and more of intelligent and discriminating decision in the selection of metals for various designs.

Research Work

"Mr. Pope has also touched on the research work which has been carried on for a number of years by malleable iron manufacturers with a view to improvement in processes and product. Probably no other branch of the metal working industry has been more active in this respect, so that to-day practices are standardized and modernized until many of the old uncertainties and difficulties are eliminated entirely. A start has also been made toward providing reliable literature for students who wish to know something of the process of making malleable castings. Our colleges and technical schools have had almost nothing heretofore of a satisfactory nature along this line while all branches of the steel industry are liberally provided with text books and literature of a comprehensive and reliable character. It is therefore a reasonably safe prediction that malleable iron will continue to find an ever increasing and expanding field of usefulness and in the not distant future its proponents fully expect to see it replace steel in many places where the latter has been improperly substituted for malleable."

Handling Coal with Portable Truck Loader

Loading bituminous coal at the rate 1 ton per minute with an automatic wagon and truck loader has enabled the American Optical Co., Southbridge, Mass., to reduce the cost of handling this material over 50 per cent. Labor shortage made it necessary for the company to find some means of loading coal from a ground storage pile other than hand shoveling. The coal arrives in carload lots and is dumped from the



The Use of a Motor-Driven Truck Loader Enables the Motor Truck Shown to Be Loaded with Bituminous Coal in Approximately 5 Min., and Has Reduced the Cost of Handling About Half

trestle to the ground storage pile shown. From here it is transported a considerable distance to the power house by motor trucks, which necessitates a second transfer of the fuel before it reaches the boilers.

To do this work a motor-driven wagon and truck loader built by the Link-Belt Co., Chicago, was purchased. This machine enables the motor truck illustrated to be loaded in approximately 5 min. for transportation to the power house. On arriving there the coal is dumped and fed to mechanical stokers. As such a short space of time is required to load the truck, it is kept in service practically all the time. One man operates the machine, and measured by the saving in time the cost of handling has been cut practically in two.

Installations of Greaves-Etchells Electric Furnaces

The Electric Furnace Construction Co. of Philadelphia announces the sale of the following Greaves-Etchells furnaces:

The American Radiator Co., Buffalo, will install another 6-ton furnace in addition to one of the same capacity ordered in September.

The Stoddard Union Co., Lockport, N. Y., will install a 1-ton furnace.

The Primos Chemical Co., Primos, Pa., will install one special furnace for making ferroalloys.

The installation of these three furnaces brings the total of this type operating or contracted for in the United States to eight.

A 2-ton furnace has also been sold to T. Waddell & Sons, New Zealand.

Electric Furnaces for Non-Ferrous Work

(*Continued from page* 1123)

Regarding savings, the statement is made that with coke costing $4 and crucibles 4c. per number there is a saving made by using electricity at ¾c. per kw. hr., which is practically what they pay. In addition the labor of carrying the coke and ashes is eliminated, together with the space for their storage.

There is one more or less serious drawback to the Baily furnace in that it is very sluggish. It takes something like 15 min. before it begins to respond to a change in power input—while as a matter of fact there is not much change in temperature for an hour. At the Lumen Bearing Co. the last heat of the day is made on practically the stored heat of the furnace. In fact, it took 49 hr. to cool the furnace from 2580 deg. to 965 deg. Fahr. This sluggishness means that if the furnace is brought to too high a temperature in the morning at the beginning of the day's melt, the metal is apt to be burned and much time lost before the proper temperature can be obtained. On the other hand, however, it is of advantage in keeping a hot furnace overnight.

In connection with the other three furnaces in use, the Rennerfelt, Snyder and Hoskins, it can be said that they are of the indirect arc, direct arc and resistance types respectively. They have been fully described many times.

The Hoskins furnace is sold mainly for work of an experimental nature as called for in the laboratory and testing room, or when it is desired to melt a small batch of metal occasionally. The manufacturers do not recommend it for commercial purposes.

The Snyder and Rennerfelt Furnaces

The only installation of Snyder furnaces handling non-ferrous metals of which the writer is aware is that of the Chicago Bearing Metal Co. There are two furnaces installed there rated at 400 kw. each taking approximately 750 kva. single-phase, 60-cycle current directly from a 12,000-volt line. The secondary line voltage is 220, with an operating voltage from 120 to 160 volts, depending upon conditions. The power factor is in the neighborhood of 60 per cent.

The furnaces have a capacity of about 2000 lb. of metal per heat and average power consumption is not over 300 kw. hr. per ton. They operate 24 hr. per day, Sundays excepted, and handle a heavily loaded bronze such as is used for car and locomotive bearings. The composition of the metal is approximately 75 per cent copper and the rest lead, tin and miscellaneous impurities in that order of importance, the lead running about 15 per cent. The metal is poured at approximately 2100 deg. Fahr., and while the metal loss is fairly high, mostly lead and some copper, they save about $12,000 net per month by doing away with the crucibles, since these two furnaces replace 40 to 50 coke and oil-fired furnaces. The high metal loss follows naturally from the use of a direct arc furnace, since it is bound to produce a superheated top layer in the bath.

There is also a saving made in increased production with smaller floor space.

The Rennerfelt furnace is in operation at the Gerline Brass Foundry Co., Kalamazoo, Mich., 1/3-ton capacity, and at the Philadelphia Mint, one of 200 lb. capacity, while two more of one-ton capacity each will soon be in operation at the Chicago Bearing Metal Co.'s plant. These furnaces are all designed for two-phase, three-wire operation.

The furnace at the Philadelphia Mint has only been in operation for a short time, so that full data is not available as yet. It handles penny stock and cupro-nickel. The penny stock is composed of 95 per cent. copper, the other 5 per cent being made up of zinc and tin. The cupro-nickel is composed of 75 per cent copper and 25 per cent nickel. Three heats are made per day, pouring the penny stock at approximately 1950 deg. Fahr. and the cupro-nickel at about 2500 deg. Fahr. French and Italian coins have been handled, composed of almost pure nickel, the lining standing up very well, although the melt was at a high temperature. A ganister bottom with silica brick lining is used.

This furnace should give a very good account of itself in handling alloys of this nature.

The furnace at the Gerline Brass Foundry has been handling red brass, enamel tank (½ red and ½ yellow brass with not over 22 per cent zinc content), and Monel metal, but not much success was attained with yellow brass ingots. Yellow brass borings could not be worked at all. This was only to be expected, since neither the direct or indirect arc type of furnace is suited for handling alloys containing metals which volatilize at comparatively low temperatures, unless some method is provided for overcoming the superheated top layer.

Some trouble was experienced with the lining giving out on the Monel metal heats, which might be attributed to lack of skill in operation rather than against the lining itself—in that the metal was melted to a very high temperature (around 3000 deg. Fahr.) in order to pour intricate castings and the furnace was over-powered. This would seem to be borne out by the fact that nickel was successfully melted at the Philadelphia Mint in the same lining.

Out of four heats making Monel metal the average of the actual melting time was 3 hr. and 48 min., with a consumption of approximately 1300 kw. hr. per ton. The average charge was 549 lb. with an average electrode consumption of 5 lb. per ton.

The result of seven heats making enamel tank castings under fair operating conditions showed an average metal loss of 3½ per cent, with an average of actual melting time of 1 hr. and 48 min. The average consumption was 537 kw. hr. per ton, while the electrode consumption was 2.8 lb. per ton. The average charge was 580 lb.

Ten heats were selected from those making red brass castings as representing fair working conditions. The results show the average charge to be 532 lb. with an average of actual melting time of 1 hr. and 14 min. The average kilowatt-hour consumption was 437 kw. hr. per ton with an electrode consumption of 2.8 lb. per ton.

It will be noted that the kilowatt hours required for making red brass castings are less than those for enamel tank, which shows that experimental figures cannot be relied on for commercial practice.

This resume covers fairly completely what has been and is being done, as far as the writer has knowledge, toward the development of an electric furnace for use in non-ferrous metallurgy. The results recorded as to performances are not as full as the writer would have liked to obtain, but it was extremely difficult to obtain them, due to the lack of keeping accurate records. It is to be hoped that the importance of so doing in order to improve the general practice of to-day, will be fully realized.

From all indications it is fair to assume that the electric furnace will soon be established on a firm commercial basis as a heating medium in this field.

J. C. Agnew, chief engineer of the mining properties of the Midvale Steel & Ordnance Co., has completed preliminary exploration work on the ore property recently acquired by the company in Wayne County, Mo., and a force of about 250 men, it is announced, will be withdrawn Dec. 1 from the Mahoning mine at Hibbing, Minn., and placed in active mining operations in the Wayne County field. Drilling which has been done has decided the best locations for taking out ore. Another organization which has undertaken the development of ore bodies in Missouri in Butler County has been formed as the American Coke & Chemical Co., with Studebaker interests and National Enameling & Stamping Co. interests as well as the Granite City Steel Works owners. This latter concern will expend about $125,000 in preliminary development and also has in view the reduction of iron ore and the making of metallurgical coke from Southern Illinois coal.

Hamilton & Hansell, agents for the Rennerfelt electric furnace, have removed from 17 Battery Place to 13 Park Row, New York.